



## Case report

# Bifocal bowel obstruction by synchronous transverse and sigmoid colon volvulus: A case report and qualitative review of the literature

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## ABSTRACT

**Introduction:** Synchronous volvulus of the transverse and sigmoid colon is an exceedingly rare clinical presentation. The dual location of strangulation constitutes a critical surgical emergency due to the heightened risk of intestinal necrosis and septic shock. Given the rarity of this condition, there is a notable paucity of detailed information in the literature, and the management strategies are poorly codified.

**Observation:** We report the case of a 23-year-old man with a history of bowel transit disorders (diarrhea and constipation), who was admitted as an emergency with typical signs of acute large bowel obstruction. Initial diagnosis of sigmoid volvulus was retained; however, intraoperative findings revealed an associated volvulus of both the transverse and sigmoid colon. A left colectomy was performed followed by colorectal anastomosis. The postoperative period was uneventful.

**Discussion:** Synchronous volvulus of the transverse and sigmoid colon is an extremely rare occurrence; it should be considered as one of the differential diagnoses of acute large bowel obstruction. There is scarcity of information in the literature regarding synchronous sigmoid and transverse colon volvulus.

**Conclusion:** Synchronous volvulus of the transverse and sigmoid colon is an exceedingly rare clinical entity. Diagnosing this condition can be difficult and the management effectiveness remains controversial. It is presumed that sigmoid volvulus is the initial event; therefore, emphasizing the need for early surgical intervention for sigmoid volvulus could potentially improve outcomes.

## 1. Introduction

The work has been reported in accordance with the SCARE criteria [1]. Colonic volvulus is the third most common cause of bowel obstruction globally, accounting for 3%–5% of all cases after tumor obstruction and complicated sigmoid diverticulitis [2]. The sigmoid colon is the most frequently affected segment with an incidence of 61%, followed by the caecum at 34.5%, and the transverse colon at 3.6% [3,4]. So, the simultaneous occurrence of sigmoid and transverse colon volvulus is a rare condition. This synchronization creates a particular emergency that requires prompt intervention, as delayed diagnosis and treatment can lead to life-threatening complications [3–2].

The dual location of strangulation renders it a significant surgical emergency with a high risk of intestinal necrosis and septic shock. Due to the rarity of this clinical entity, there is paucity of information in the

literature, and the treatment options remain poorly defined. We report a case of synchronous volvulus of the transverse and sigmoid colon in a 23-year-old male patient.

## 2. Case report

We present the case of a 23-year-old patient who was brought to the surgical emergency room of the Treichville Abidjan hospital (Ivory Coast) by his parents, complaining of abdominal pain. The onset of the symptoms would have started 4 days before with pain whose intensity suddenly worsened 12 h before admission. It was in the left iliac fossa without irradiation. This pain is associated with very abundant bilious vomiting. The patient's questioning reveals a notion of cessation of bowel movement and flatus. There were no signs of digestive bleeding or fever. His medical history included chronic constipation, and he had no

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previous surgical interventions. On general examination, the patient was in good overall condition with stable hemodynamic parameters without any signs of dehydration. Physical examination reveals abdominal distension with asymmetry, pain on palpation and diffuse tympanism on percussion. There is emptiness of the rectal bulb when touched. A nasogastric tube yielded 800 cc of fecaloid fluid.

Abdominal X-ray without preparation shows colonic hydro-aerial levels higher than wide describing a double-legged arch (Photo 1).

Abdominal ultrasound showed non-specific images but suggested acute intestinal intussusception in the left iliac fossa (Photo 2).

The blood test analyzed presented leukocytosis (white blood cells [WBC] = 13,900 g/dL with 77 % neutrophilia). The diagnosis of sigmoid colon volvulus was established, and the patient underwent emergency surgery following brief resuscitation. Under general anesthesia, a median laparotomy was performed. Intraoperative findings included volvulus of both transverse and sigmoid colon, without intestinal necrosis (Photo 3). The sigmoid volvulus was twisted twice in an anti-clockwise direction, while the transverse colon volvulus was twisted once in a clockwise direction. The two volvulated segments formed a knot, with the transverse colon situated beneath the sigmoid colon (Photo 4). Additionally, an unfixed left colic angle, an unusually long sigmoid colon (80 cm), and retractile mesosigmoiditis were observed.

Given these findings, a Left colectomy was performed, followed by colorectal anastomosis without detorsion of the volvulated segments. The postoperative course was uneventful, with complete resolution of initial symptoms. The hospitalization lasted 8 days. The late outcomes after one year were simple. The anatomopathological analysis of the resected tissue revealed no abnormalities.

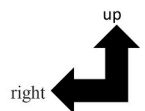
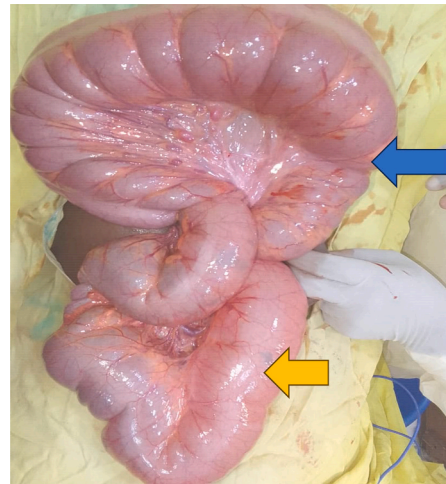
**3. Discussion**

The SCARE criteria were used to assess every article [1].

A systematic review of the literature between 1999 and 2024 was performed. The search engines used were PubMed, Google scholar, academia, and African Journal Online (AJOL). The search terms were “volvulus”, “sigmoid or pelvic”, “transverse”, “colon” associated or not with the terms “knot”, “simultaneous”, “synchronous”, “combined” and “double”. Only articles (clinical case, series of cases) written in English or French describing simultaneous volvulus of the sigmoid and transverse colon were included. Recurrence of volvulus after colonic



**Photo 2.** Ultrasound image suggesting intussusception.



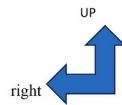
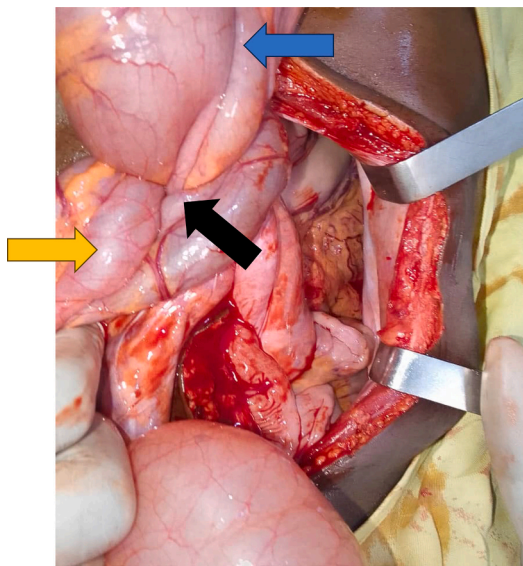
**Photo 3.** Intraoperative image showing a double volvulus right. Yellow arrow: Dilated transverse colon without necrosis. Blue arrow: Dilated sigmoid colon without necrosis.



**Photo 1.** Erect plain abdominal radiography: upside-down U-shaped loops of dilated bowel with air-fluid levels at the feet.

resection was not included. In addition, a manual search of references from identified articles was performed to ensure that no article was inadvertently forgotten. A total of 14 clinical cases were included. The parameters studied were: countries, age, sex, diagnostic modalities, associated conditions, intraoperative findings, treatment and the evolution. The different studies and their results are detailed in Table 1.

The term volvulus is derived from the Latin word *volvere* (“to twist”). A colonic volvulus occurs when a segment of the colon twists on its mesentery, leading to acute, subacute, or chronic colonic obstruction.



**Photo 4.** Black arrow colic knot.  
Blue arrow sigmoid.  
Yellow transverse right.

This could disrupt venous returning and arterial supply, causing ischemia [18]. Volvulus is one of the rare causes of bowel obstruction, which includes only 3 %–5 % of cases [2]. The most common part that volvulus occurs in the colon is the sigmoid colon (61 %–75 %), caecum (15 %–34.5 %), transverse colon (3 %–5 %), and splenic flexure (2 %) [19]. Transverse colon volvulus is rare due to its anatomical position, where a short mesocolon and colonic flexure maintain its location [18]. Synchronous volvulus of the transverse and sigmoid colon is extremely rare, it should be considered as one of the differential diagnoses in patients presenting with obstructive signs and symptoms. Literature on synchronous transverse and sigmoid colon volvulus is sparse [9].

Synchronous volvulus of the transverse and sigmoid colon is more common in Africa as shown in Table 2 through our review of the literature.

Synchronous transverse and sigmoid colon volvulus can occur at any age. The average age of the patients is 55.23 years with extremes of 23 to 82 years. Most patients (50 %) were older than 60 years, as found in the work of Ndong et al. [10]. A male predominance of 71.42 % is noted and correlates with the literature on colonic volvulus [2], which was not the case with Ndong et al. [10] where there were 4 women and 3 men, this

**Table 2**  
Distribution according to continents.

Continent	Effective	Percentage
Africa	8	57,14 %
Europe	2	14,28 %
Asia	3	21,14 %
USA	1	7,14 %

**Table 1**  
Results.

References	Countries	Age (Year)	Gender	Diagnostic modalities	Associated conditions	Intraoperative findings	Treatment	Evolution
Katsanos et al. [5]. 2008	Greece	83	F	Radiography CT scan Endoscopy	Ulcerative colitis	Megacolon with gangrene	Left hemicolectomy + transversectomy	Good
Lianos et al. [6]. 2012	Greece	82	F	Radiography CT scan	Constipation	No gangrene MEGACOLON	Total colectomy with ileostomy	Good 8 days
Hossenli A et al. [7]. 2014	Iran	73	F	Radiography	Constipation	Gangrene	Subtotal colectomy + ileo-rectal anastomosis	Good 7 days
Wisler et al. [8]. 2017	USA	NON	M	Radiography	Chronic abdominal distension	No gangrene	Resection + end- transverse colostomy	Good 5 jours
Motsumi et al. [9]. 2018	Botswana	26	M	Radiography	Not available	No gangrene	Subtotal colectomy with colostomie	Not available
Ndong et al. [10]. 2020	Senegal	74	M	Radiography	Constipation	No gangrene	Left hemicolectomy + colostomy	Good
K. Keita et al. [11]. 2021	Mali	30	M	Radiography	Chronic constipation	No gangrene	Left hemicolectomy + anastomosis	Good 12 days Diarrhea
	Mali	62	M	Radiography	No constipation	No gangrene	Left hemicolectomy + anastomosis	Good 14 days Diarrhea
T. Amadou et al. [12]. 2021	Mali	23	M	Radiography	Constipation	No gangrene	Left colectomy with anastomosis	Good 9 days
Samlali A et al. [13]. 2021	Morocco	52	F	Radiography CT scan	Constipation	No gangrene	Subtotal colectomy with anastomosis	Good 6 days
Lamyae Kallouch. [14]. 2021	Morocco	65	M	Radiography CT scan	Chronic constipation	No gangrene	Left Colectomy with anastomosis	Good
Torabi H et al. [15]. 2021	Iran	72	M	Radiography	Constipation	Gangrene	Total colectomy with anastomosis	Good
JL Kambire et al. [16]. 2021	Burkina Faso	31	M	No radiography	No chronic constipation	No gangrene	Resection with anastomosis	Death
Hossein Torabi et al. [17]. 2023	Iran	45	M	Radiography	Constipation	Gangrene	Total colectomy with ileostomy	Good

could be explained by the fact that his study was carried out on seven cases.

The etiological factors of colon volvulus are relatively the same regardless of the site. The occurrence of simultaneous volvulus is caused by the same factors probably acting in concert [10]. Indeed, several factors are incriminated and are of 3 types: anatomical, physiological, and congenital [10]. Anatomical factors described in the literature are dolichocolon [3]. In all patients presented with dolichocolon; physiological factors are represented by chronic constipation. In our review, 11 of 17 patients presented with chronic abdominal distension or chronic constipation.

Congenital factors are represented in this study by an absence of fixation of the left colon and this could perhaps explain the volvulus of the transverse colon.

All the risk factors found in our study are as follows: chronic constipation; dolichocolon, unfixed left colon and megacolon.

Clinical examination is the first step in diagnosing this disease, but no specific symptoms and findings in the clinical examination could help the surgical team to differentiate double volvulus, particularly from another part of the colon volvulus [15]. Another important way that could be effective and useful is imaging, such as abdominal X-ray and CT scan, but choosing which one is more effective in the situation depends on the surgical team and the patient's condition [15]. The CT scan offers better sensitivity and specificity in the diagnosis. It can show two concomitant whirl sign which can suggest a simultaneous volvulus [10]. In simultaneous volvulus conditions, diagnostic view and features such as coffee bean sign, north-ern exposure, or inverted U-shaped sign may not be seen [20].

This explains why preoperative diagnosis remains difficult and simultaneous volvulus is often discovered during surgery, as in 12 out of 14 patients, in my case report the diagnosis was made preoperatively. Necrotic volvulated loops were present in 4 patients [5,7,15,17]. The direction of torsion varied across the studies.

The intraoperative findings find two volvulus, but the question we have the right to ask is to know which one is the first. No data from the current literature allows us to answer this question, but we could suggest that sigmoid volvulus would be the first given the risk factors associated with sigmoid volvulus.

Surgical treatment consists of resection of the volvulated segments with immediate or delayed restoration of digestive continuity [16]. In our observation, a left colectomy with colorectal anastomosis was performed. We opted for a partial colectomy with immediate colorectal anastomosis (one-stage surgery) due to favorable local and general conditions (young patient, without comorbidity, absence of intestinal necrosis, correct resuscitation). This therapeutic attitude in the management of synchronous volvulus of the transverse and sigmoid colon is shared by several authors [7,11–16]. However, other authors have opted for a stoma with delayed restoration by continuity [5,6,8–10,17]. Total colectomy is sometimes necessary as in the three cases [6,15,17]. This attitude is explained by the importance of ischemia and the presence of necrosis throughout the colon [15,17]. One reported case involved sepsis leading to death [16].

#### 4. Conclusion

Synchronous volvulus of the transverse and sigmoid colon is an extremely rare clinical entity. Diagnosing and managing this condition can be challenging, and current treatment approaches remain controversial. It is presumed that sigmoid volvulus is the first event; it may be useful to stress earlier surgical treatment of sigmoid volvulus.

#### Ethical approval

The ethical committee of the hospital gave the agreement to report this case.

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#### Author contribution

Kouassi Henry Noel Ahue, Kouide Marius Goho, Auguste Alexandre Adon, Coulibaly N'golo Adama; Kunka Jocelyne Kpan, Moctar Keita, these authors participated in the making and correction of this document. All authors agreed with the publication of the document.

#### Guarantor

Kouassi Henry Noel Ahue.

#### Research registration number

Research registry 10578.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Not commissioned, externally peer-reviewed.

#### Conflict of interest statement

The authors report no declarations of interest.

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