

Spontaneous detorsion of sigmoid volvulus in a toddler: A timely abdominal X-ray that clinched the diagnosis and a review of the role of radiology

Akintunde Olusijibomi Akintomide, Akan Wilson Inyang

ABSTRACT

Introduction: Sigmoid volvulus is extremely rare in children and the spontaneous detorsion is even more rarely encountered by clinicians. If it is undiagnosed on first presentation because of spontaneous detorsion, it could recur with severe complications like bowel wall gangrene, perforation and peritonitis which requires emergency Laparotomy with attendant higher mortality. **Case Report:** An acutely ill looking eighteen months toddler presented with a two day history of sudden onset of abdominal distension without associated pain. There were no obvious risk factors or previous history of similar episode. The abnormal findings on physical examination were mild pallor, abdominal distension and reduced bowel sounds. All his vital signs were stable. The urgent abdominal X-ray carried out soon after presentation, revealed the classical “Coffee bean sign” of the displaced dilated sigmoid colon. He was admitted, placed on intravenous fluid and nil per oral, and booked for Laparotomy. In about five to six hours while waiting for the surgery, his bowel opened to flatus and later to faeces with subsequent reduction in abdominal girth and normalized bowel sounds. **Conclusion:** Sigmoid Volvulus occurs in children and spontaneous untwisting is a reality. If the

abdominal X-ray was done after the passage of flatus, the diagnosis would have been missed. We recommend that patients should have an abdominal X-ray immediately they present with sudden onset of abdominal distension to increase the chances of demonstrating the radiological features of sigmoid volvulus in order to offer an elective surgery to prevent recurrence, complications and reduce mortality.

Keywords: Detorsion, Sigmoid volvulus, Timely abdominal X-ray, Toddler

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Akintunde Olusijibomi Akintomide¹, Akan Wilson Inyang²

Affiliations: ¹Associate professor, Radiology Department, University of Calabar, Cross River State, Nigeria; ²Senior Lecturer, Surgery Department, University of Calabar, Cross River State, Nigeria.

Corresponding Author: Dr. Akintunde Olusijibomi Akintomide, Radiology Department, University of Calabar Teaching Hospital, Calabar, Cross River State, Nigeria; Email: tun-deakins@yahoo.com

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INTRODUCTION

Sigmoid Volvulus means torsion or twisting of the sigmoid colon on itself and its mesentery. It is common in Africa, South America, Russia, India, Pakistan, Iran, Turkey, Eastern Europe, Scandinavia and western countries [1, 2]. It has several risk factors. It is reported to be extremely rare in the paediatric age group [3, 4]. Spontaneous untwisting is also not commonly encountered by clinicians.

We report this case to confirm that spontaneous reduction, do occur and to emphasize the importance of carrying out radiological investigations immediately patient present with symptoms suggestive of sigmoid

volvulus: sudden onset of gross abdominal distension, with or without pain and vomiting.

CASE REPORT

We report a case of an 18-month-old boy, who presented to us with two days history of sudden onset of abdominal distension associated with inability to open bowel to faeces and flatus. There was no abdominal pain. However, three days prior to presentation, there was passage of copious, none bloody watery stool. Past medical history revealed recurrent episodes of similar bowel motions associated with vomiting which lasts for an average of five days. There was no history of delayed passage of meconium or chronic constipation dating back to the neonatal period. The patient opens bowel about 1 – 2 times a day to formed stool normally. He has had no previous surgery.

He weighed 10kg and his vital signs on presentation were: temperature of 37.2° C, pulse of 120 beats per minute and respiratory rate of 30 cycles per minute. On examination, he was acutely ill looking, warm to touch, pale, anicteric, acyanosed, fairly hydrated and not in respiratory distress. The abdomen was distended, moved with respiration and showed no obvious peristalsis. It was soft and non tender on light palpation, with a girth of 46cm, taken at the level of the umbilicus. Percussion note was tympanic and the bowel sounds were reduced on auscultation.

A provisional diagnosis of intestinal obstruction, query cause was made. The patient was admitted, placed on nil per oral (NPO) and intravenous fluid was commenced. An urgent abdominal X-ray was requested for along with other investigations: full blood count, serum electrolyte/urea/creatinine, Malaria parasite, Urinalysis and Widal test.

The plain abdominal radiograph; supine view (Figure 1) revealed a dilated large loop of bowel arising from the pelvis and extending into the central abdomen to the level of the 12th thoracic vertebra. The loop exhibits three opaque stripes and its apex is on the left side of the midline. This gives the classical “coffee bean” sign of the displaced, dilated sigmoid colon. There was no rectal gas shadow.

Based on the radiographic diagnosis, the patient was booked for surgery. About 5 to 6 hours after presentation in our hospital while preparing for the surgery, he spontaneously opened bowel to flatus with resultant reduction in the abdominal distension (41 cm) and the bowel sounds also normalized. In another six hours, he also opened bowel to faeces. The digital rectal examination done at this stage revealed a normal anal sphincteric tone, an empty roomy rectum and the examining finger was stained with loose stool.

A repeat abdominal X-ray revealed normal loops of large bowel (Figure 2). Apart from the packed cell volume (PCV) of 28%, all the other results of the investigations

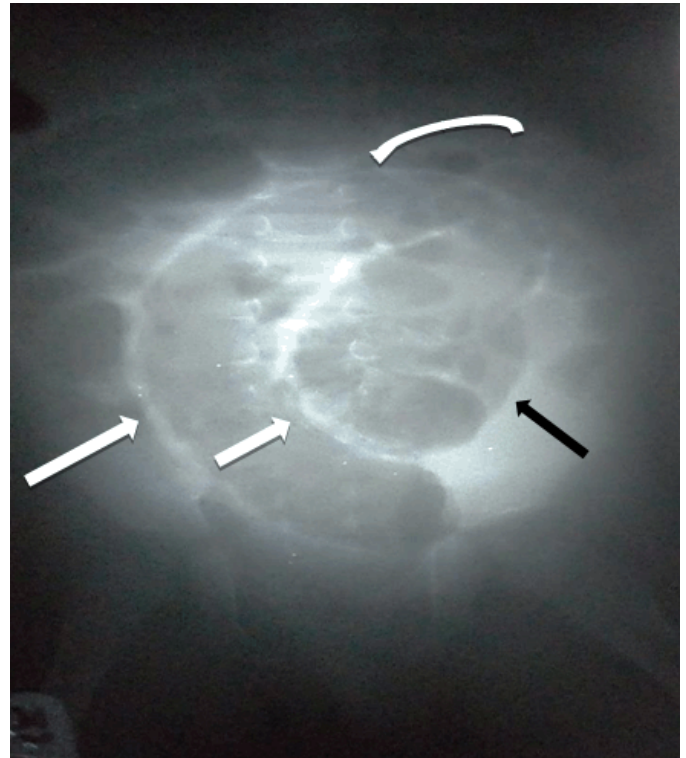


Figure 1: Plain abdominal radiograph (supine view) showing an inverted U-shaped dilated large loop of bowel arising from the pelvis and extending into the central abdomen to the level of the 12th thoracic vertebra. The loop exhibits three opaque stripes (long straight white arrow on the right, short straight white arrow centrally and black arrow on the left). The apex of the loop is on the left side of the midline (curved white arrow). This gives the classical “coffee bean” sign.



Figure 2: Plain abdominal radiograph (supine view), showing a normal bowel gas distribution and calibre but the large intestine is laden with faecal matter. No evidence of ascites or extraluminal gas shadow.

requested for were within normal limits.

On the 3rd day, he was passing stool freely and there was no abdominal distension, so he was discharge home. He was free of the signs and symptoms of sigmoid volvulus During the 6 months of follow up.

DISCUSSION

Some reported risk factors of sigmoid volvulus are, previous abdominal surgery, recurrent constipation, neuromuscular disorders, intestinal neuronal dysplasia (IND) type B, Prune belly syndrome, congenitally long sigmoid colon with a narrow and long mesentery, malrotation, congenital anomalous fixation of the colon absence of mesocolon, imperforate anus, Hirschsprung disease, roundworm infestation and high fibre diet [5–15].

Clinically, patients with sigmoid volvulus present acutely or with recurrent episodes of abdominal pain [2, 16–17]. The acute form has a rapid course that might lead to bowel obstruction, ischaemia, necrosis and perforation. Peritonitis and sepsis may also set in.

It may resolve spontaneously but usually results in obstruction of the intestine [18]. If it resolves spontaneously without radiological investigations, it may be misdiagnosed as constipation because of the passage of stool and flatus that follows the relief of symptoms [19] or as other benign conditions with similar presentation.

The commonest symptom and sign of sigmoid volvulus in children are abdominal pain and distension [5, 20]. Radiological investigations carried out when patients still have symptoms and signs of sigmoid volvulus, increase the chances of picking up its classical features and making a correct diagnosis, even on a plain abdominal radiograph, especially in acute presentation. Our patient presented acutely, had an abdominal X-ray when the abdominal distension was still present and the radiograph was diagnostic based on the “coffee bean” sign. Similarly, in a study of 28 cases of acute presentation, plain abdominal X-ray was 100% diagnostic [17]. Osiro et al [16] also stated that, plain abdominal radiography was used to make the diagnosis of sigmoid volvulus in most of the cases they reviewed. One of the reports however, stated that the classical sign (“coffee bean” sign or displaced colonic dilatation) of sigmoid volvulus is less commonly demonstrated on plain radiograph in children (17–30%) compared to the adult patients (60–90%) [14]. However, it did not state if this observation was made in the acute or chronic forms. If patients are no longer symptomatic on presentation, radiological evaluation is still recommended, especially those with higher sensitivity to aid in diagnosis. This is because relief of symptoms and signs does not always mean detorsion has occurred or is complete. There are only a few reported cases of spontaneous untwisting or detorsion similar to ours in the reviewed literature [21–23]. Early evaluation is also necessary despite relief of symptoms because, the torsion might recur [24] or worsen and re-present

with complications of obstruction and gangrene of the bowel wall. The incidence of these complications, are quite high as revealed in a 15 year study carried out in a tertiary hospital in Nigeria, where 95% of patients with sigmoid volvulus who presented with bowel obstruction (49.6% of all large bowel obstruction) had gangrenous walls [25]. The diagnostic value of plain X-ray can be improved by repeating the examination with the rectal tube in situ. This will demonstrate the location of the torsion and allow estimation degree of rotation because the extent of the rectal tubal twist seen within the lumen of the sigmoid in the supine abdominal radiograph corresponds to the degree of volvulation [26]. It can also be used to confirm the success of a nonsurgical detorsion procedure. Shepherd [27] reported that, torsions above 180° and 360° are usually the ones that result in colonic luminal obstruction and ischaemia respectively. Between episodes, the abdominal radiograph may be normal, so diagnostic water soluble enema (Barium or Gastrografin) is the imaging modality of choice to confirm colonic torsion with demonstration of the classical sign, variably described as: “Bird beak”, “Ace of spades” “snake head” or twisted taper”. Barium enema increases the diagnostic sensitivity in paediatric patients by 71–82% [14]. Barium enema can also be therapeutic in uncomplicated cases. This was demonstrated in a series of colonic volvulus, where 11 out of 14 cases were successfully reduced with barium enema [28]. Computed tomography (CT) Is very useful in this clinical condition. Apart from confirming diagnosing of sigmoid volvulus, it will help rule out some of the predisposing risk factors and detect complications. CT will demonstrate the location of the sigmoid, and the twisting of the mesentery and vessels (Whirl sign).

Ultrasonography (US) is of limited value in sigmoid volvulus. It is used to rule out free peritoneal fluid or intussusception, which has similar clinical presentation in this age group [3, 29].

CONCLUSION

Sigmoid Volvulus occurs in children and spontaneous untwisting is a reality. If the abdominal X-ray was done after the passage of flatus/faeces, the diagnosis would have been missed. We recommend that patients should have the first abdominal X-ray immediately they present with abdominal distension to increase the chances of demonstrating the radiological features and a second one in uncomplicated cases, after the passage of a rectal tube. These will allow early diagnosis and grading of severity, in order to offer an elective surgery to prevent recurrence, development of more complications and reduce mortality.

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Author Contributions

Akintunde Olusijibomi Akintomide – Substantial contributions to conception and design, Drafting the article, Final approval of the version to be published
 Akan Wilson Inyang – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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