Case Report

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# Sigmoid volvulus in a neonate: Case report and review of literature

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## ABSTRACT

Sigmoid volvulus (SV) is an extremely rare cause of bowel obstruction in the newborn period. We report a neonatal case of SV misdiagnosed as small bowel volvulus. At laparotomy, the classical findings of SV were observed without gangrene. The operative procedure consisted of simple detorsion without sigmoidopexy.

**Key words:** Bowel obstruction, newborn, sigmoid volvulus

## INTRODUCTION

Sigmoid volvulus (SV) is the most common large bowel volvulus in adults; in children, however, colon volvulus is uncommon and it occurs when the sigmoid colon twists around its mesentery. SV is a disease of the elderly, often in those who are institutionalised and debilitated with neurologic and psychiatric conditions.[1] The first report of SV in a 14-day-old boy was published in 1961 whereas the youngest patient reported is a 1-day-old boy with anal stenosis.[2,3] SV is rarely considered in the differential diagnosis of abdominal pain (acute or recurrent) in neonates and children and this could be responsible for the devastating results. We report a preterm neonate in which acute SV occurred and discuss the clinical presentation, predisposing factors and management.

## CASE REPORT

This was a case report of a male preterm neonate presented at the emergency room with sudden onset of poor feeding, constipation, vomiting and increasing abdominal distension. The laboratory data were unremarkable. Plain abdominal radiographs showed distended bowel loops and air-fluid levels in the small intestine without free air and specific "coffee-bean" abdominal gas pattern [Figure 1]. The baby was resuscitated by nasogastric tube, intravenous fluids and broad-spectrum intravenous antibiotics. As the hours passed, the baby developed bilious vomiting and collapse. With the suspicion of mechanical ileal obstruction, the patient underwent emergency laparotomy and a 360° clockwise SV was found. Pathological findings consisted of a redundant sigmoid loop rotated around its narrow, elongated mesentery. There was no gangrene and detorsion was the only procedure done. Recovery was immediate and uneventful. The baby was discharged early after complete feeding was resumed. At 2 years follow-up, he is doing well.

## DISCUSSION

SV is a rare cause of bowel obstruction in newborns and children, the median age is 7 years, there is a strong male predominance (Male:Female = 3.5:1) with a wide geographic variation.[4] The presentation can range from acute to recurrent abdominal pain that is often relieved

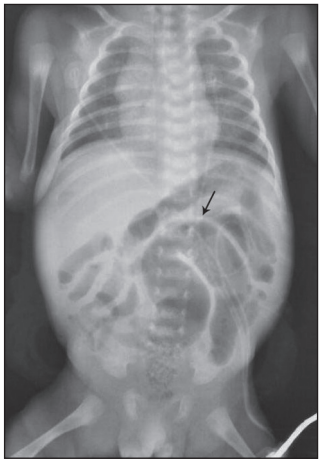


**Figure 1: Plain abdominal X-ray showing distended bowel loops floating on ascitic fluid. A small bowel or sigmoid loop was suspected to be twisted (arrow)**

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by passage of stool or flatus. The diagnosis is usually missed or delayed with devastating consequences and constipation is a common misdiagnosis.[5] The possibility of SV should be suspected in presence of abdominal pain, constipation, nausea, vomiting with abdominal distension, tenderness and mass. Continuous abdominal pain, signs of peritonitis and fever suggest worse conditions and perforation. Bowel peristalsis is compromised and rectum is empty.[6] The aetiology of SV is different in children than in adults with constipation being the most common cause in the elderly.[7] Although the aetiology in children is not completely understood, the hypothesis is the presence of a congenital elongation of the sigmoid colon with a pathological long colonic mesentery in association with a narrow base or lack of fixation of a part of the colon.[8] Constipation can be considered as a cause with progressive colonic redundancy or a result. Other predisposing factors include imperforate anus, Hirschsprung's disease and chronic constipation.[1] The diagnosis is often difficult considering history, physical examination and plain abdominal radiographs. The gas pattern on X-ray is non-specific due to the absence of single U-shaped sigmoid loop as in adults and the inconsistent presence of the "coffee-bean" sign. The diagnosis can also be made by computed tomography scan. Typical findings include a whirl pattern, caused by the dilated sigmoid colon around its mesocolon and vessels and a bird-beak appearance of the afferent and efferent colonic segments. However, these classic imaging features are not uniformly seen. The management of SV remains controversial, partly due to its rare occurrence. Barium enema has both diagnostic and therapeutic importance but can be complicated by perforation and should not be attempted in any patient with possible peritonitis. Reduction by endoscopy and decompression by a rectal tube are other means of non-operative management, but they also carry the risk of perforation and delay in resection of necrotic bowel. Furthermore, non-operative reduction alone has a high recurrence rate (35%) and it is not considered definitive, but only allows stabilisation of the patient and preparation of the colon for surgery.[9] The neonate reported here had rapidly deteriorated and as there was a suspicion of mechanical ileal obstruction, with bowel ischemia and gangrene, contrast studies were not performed. At emergency laparotomy, a 360° clockwise SV was found without any signs of bowel necrosis. A non-resection approach was chosen with simple derotation as resection with primary anastomosis in emergency situations carries an unacceptable high complication rate in the absence of bowel preparation. The individual risk factors and operative findings have been considered as the basic factors for choosing the surgical procedure. In case of gangrenous colon, resection and primary anastomosis may be performed if the patient is stable and if anatomic conditions are appropriate for a tension-free anastomosis. Hartmann's procedure or Mikulicz's colostomy are other alternatives. In non-gangrenous cases, only detorsion may be performed in high-risk patients as in the case reported here. A volvulus-preventing procedure, like sigmoidopexy or mesocoloplasty, may be added in case of recurrent SV or if other anomalies and risk factors are present.[10] Considering that our neonate had not any major predisposing factors, sigmoidectomy was not an option due to the poor clinical condition and absence of colonic pre-operative preparation. Operative procedure consisted of simple detorsion without sigmoidopexy as the role of sigmoidopexy is controversial considering the spontaneous adhesions that occur after laparotomy. The overall mortality rate for SV is 6% while operative and neonatal mortality has been reported as 8.1% and 14%, respectively.[4] The most common cause of death in patients with a volvulus is sepsis. Other causes include pneumonia, intracranial hemorrhage, malnutrition, renal failure or hepatic failure, continued bowel obstruction and other life-threatening anomalies. Causes of long-term post-operative morbidity include adhesive bowel obstruction and recurrent volvulus.

## CONCLUSION

In our experience and in accordance to literature review, children with SV can be expected to do well in the absence of co-morbidities or bowel necrosis secondary to volvulus, with low morbidity and mortality and excellent chances of total resolution of related symptoms.

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