

Small Bowel Volvulus in Adults at University of Uyo Teaching Hospital: A Six Year Review

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ABSTRACT

Small bowel volvulus in adults is rare and occurs more frequently in Asia and Africa than the Western world. We reviewed 12 cases of adult small bowel volvulus treated over a 6 year period as well as its presentation and management at the University of Uyo Teaching Hospital, Uyo, Nigeria. The records of patients with small bowel volvulus seen at University of Uyo Teaching Hospital from January 2007 to April 2013 were reviewed retrospectively. Consecutive adult patients confirmed intra-operatively were included while those without intra-operative confirmation and children were excluded. Twelve adult patients presented with small bowel volvulus confirmed intra-operatively. Male to female ratio was 2:1. Age range was 17 to 61 years (mean 33.0 years). The ratio of primary to secondary types was 3:1, four patients (33.3%) had gangrenous bowel, 9 patients (75.0%) had incidental finding of slightly mobile caecum and 3 patients (25.0%) also had coexisting inflamed appendix. Surgical procedures carried out include right hemi-colectomy in 3 patients (25.0%), resection and anastomosis of small intestines in 2 patients (17.0%), detortion/adhesiolysis with appendectomy in 3 patients (25.0%), and detortion/adhesiolysis only in 3 patients (25.0%). Three patients that had right hemi-colectomy also had slightly mobile caecum. Six other patients with mobile caecum also had caecopexy in addition to other procedures. Four patients (33.3%) had superficial surgical site infection (SSSI), one patient (8.3%) had postoperative bowel gangrene. One patient died giving a mortality rate of 8.3%. Small bowel volvulus is an unusual cause of intestinal obstruction associated with relatively high mortality, requiring early operative intervention to improve outcome.

Keywords: *Small bowel volvulus, intestinal obstruction, laparotomy*

INTRODUCTION

Small bowel volvulus (SBV) refers to the torsion of a loop of small bowel around the axis of its mesentery resulting in partial or complete intestinal obstruction.^{1,2} The clinical manifestation could be due to the mechanical obstruction, strangulation of the mesenteric vasculature, or both.³ SBV is a surgical emergency requiring high index of suspicion and prompt intervention to avoid a disastrous outcome. Mortality has been reported as 9 -35%, increasing to 20-100 % with bowel necrosis.^{4,5} SBV is mostly seen in early infancy, but rarely in adults.⁶ SBV can be classified into primary and secondary types. Primary SBV occurs in patients with normal gastrointestinal anatomy, as seen in the high incidence regions like Asia and East Africa, while secondary SBV is caused by either congenital anomalies or acquired lesions.^{4,5} The objective of this study is to review our experience of small

bowel volvulus in adults in University of Uyo Teaching Hospital over a six year period (January, 2007 to April, 2013) with regard to presentation, diagnosis, surgical treatment, and outcome.

MATERIALS AND METHODS

The clinical records (folders) of patients diagnosed with SBV at University of Uyo Teaching Hospital from January, 2007 to April, 2013 were retrieved from the medical records department. Data were collected in a structured proforma and analyzed. Only adults with SBV confirmed at laparotomy were included in the study. Children with SBV and patients with suspected small intestinal obstruction from SBV that were not confirmed were excluded from the study. The relevant data were analyzed retrospectively with regard to the clinical presentations, investigations, surgical findings and procedures done, and outcome. Analysis was done using STATA version 10.

RESULTS

Twelve adult patients with SBV confirmed at laparotomy were managed at the center from January, 2007 to April, 2013. The age range of the patients was 17 to 61 years with a mean age of 33 years. Eight patients were males

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and 4 patients were females with a male to female ratio of 2:1(Figure 1). All the patients had non-specific features suggestive of small intestinal obstruction like generalized colicky abdominal pain (which started centrally before becoming generalized), nausea, vomiting, absolute constipation and abdominal swelling. Nine patients (75.0%) developed the symptoms after a meal following a period of fasting. One patient (8.3%) had a past history of abdominal surgery. Routine pre operative work up was done and the results were essentially normal, except for 4 patients (33.3%) that had leucocytosis, which was due to neutrophilia. An erect and supine plain abdominal x-ray was requested for all the patients, and all showed general features suggestive of small bowel obstruction. No further radiological studies was done in any of the patients to aid the diagnosis of SBV as the cause of the intestinal obstruction. All the patients had surgical exploration done, and SBV was confirmed intra-operatively as the diagnosis in all the patients. The range of twist was 240 degrees to 360 degrees. Gangrenous loops of bowel were found in 4 patients (33.3%) (Figure 2). Primary SBV was seen in 9 patients (75.0 %): 7 males (58.3 %) and 2 females (16.7%) (Figure 3). All the patients with primary SBV had long mesentery of jejunum and ileum with a narrow base, the long mesentery did not involve the caecum. Secondary

SBV occurred in 3 patients (25.0%), those due to adhesions or bands occurred in 2 patients (16.6 %) (Figure 4) and internal hernia via a mesenteric window occurred in 1 patient (8.3 %) (Figures 5 and 6). Nine patients (75.0%) had incidental finding of slightly mobile caecum that was not part of the small bowel volvulus. Three patients (25.0 %) had inflamed appendixes that were confirmed by histology. Detortion and release of bands were done in 3 patients (25.0%). Three patients (25.0%) also had appendicectomy in addition to other procedureds. Small bowel resection and anastomosis was carried out in 2 patients (16.7%). Right hemicolectomy was performed in 3 patients (25.0 %). Prophylactic caecopexy was done for the incidentally found slightly mobile caecum without right hemicolectomy in 6 patients (50.0%). Regarding postoperative complications, 4 patients (33.3%) had superficial surgical site infections (SSSI). One patient (8.3%) developed postoperative peritonitis (from bowel gangrene) for which a repeat resection and anastomosis was done and the patient recovered. One patient out of the 12 died with overall mortality rate of 8.3%. He had gangrenous bowel. This resulted in a mortality rate of 0.0% for the 8 patients with viable bowel and 25.0% for the 4 patients with non viable bowel.

DISCUSSION

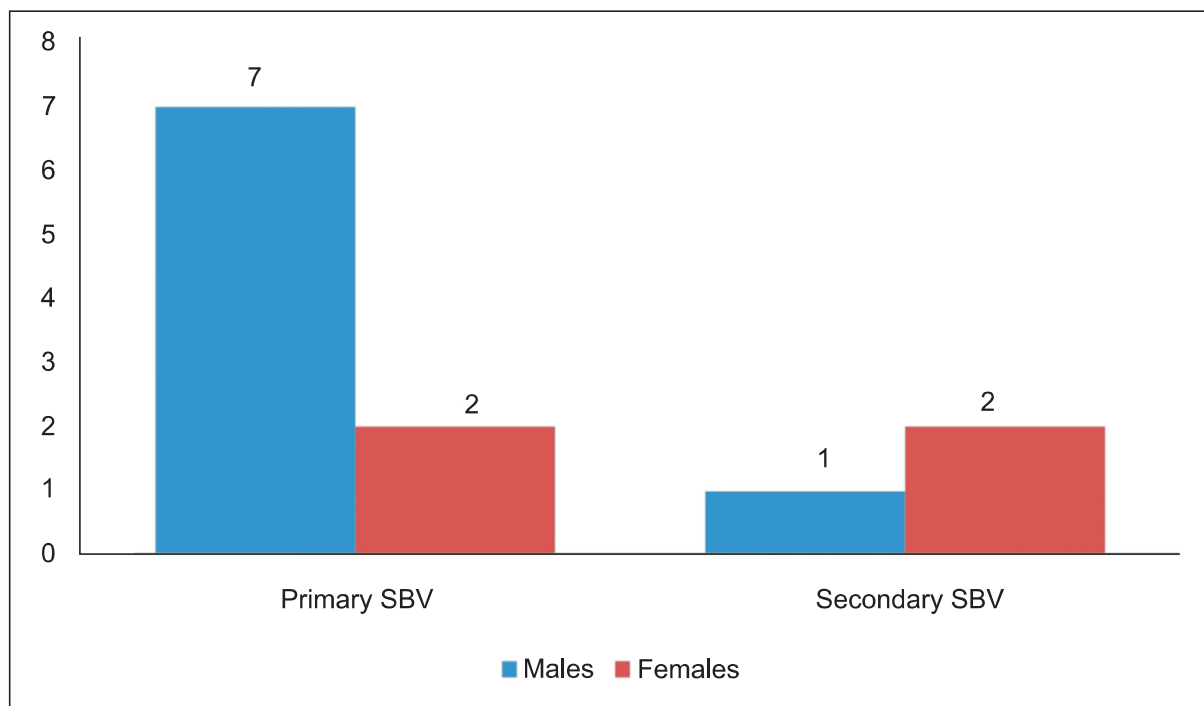


Figure 1: Sex distribution of small bowel volvulus according to type

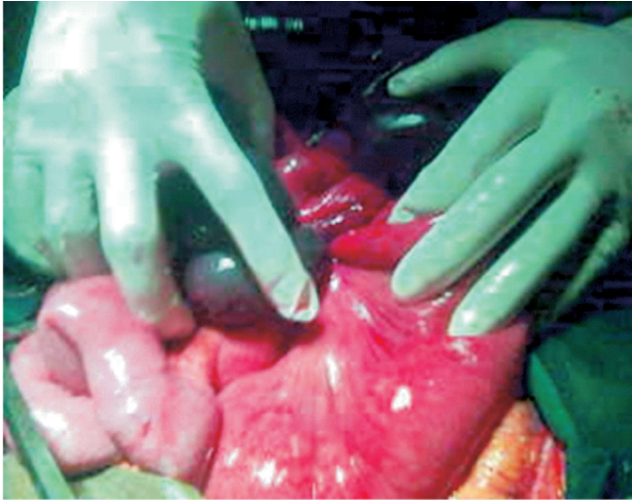


Figure 2: Small bowel volvulus with gangrenous loop of bowel

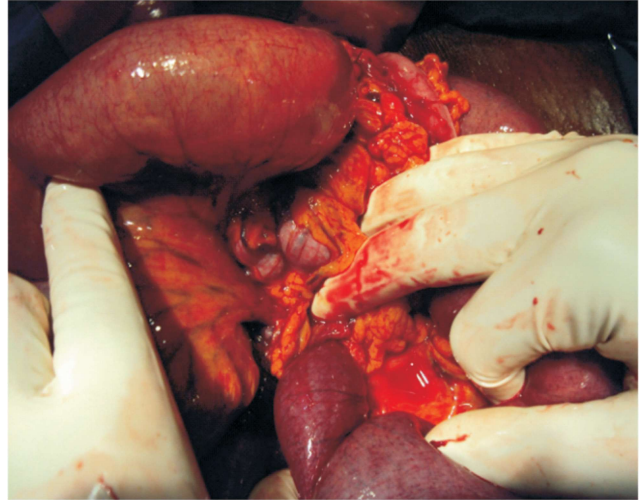


Figure 4: Adhesive bands in a patient with small bowel volvulus.

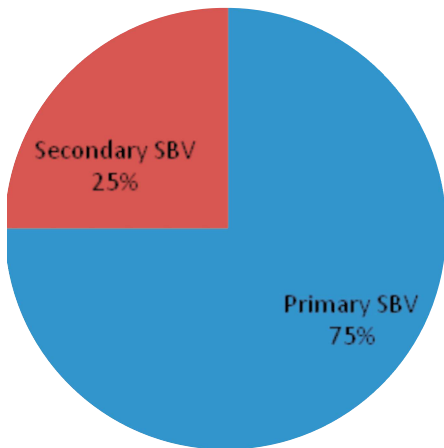


Figure 3: Distribution of small bowel volvulus according to type



Figure 5: Internal hernia in a patient with small bowel volvulus.

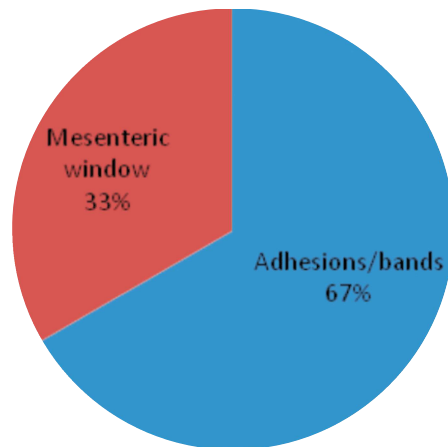


Figure 6: Causes of secondary small bowel volvulus

Intestinal volvulus in adults involves the colon much more often than the small intestine, the sigmoid colon alone accounting for 70 -80%.⁷ SBV is a rare cause of small intestinal obstruction in North America and Europe accounting for 1-6% of cases.⁸ However it is commoner in Africa, Asia, and Middle East where it accounts for 20-35% of small intestinal obstruction, the SBV being mostly of the primary type. This could partly be due to ingestion of large quantities of high fiber diet following prolonged fasting such as occurs during the Ramadan in these regions.^{1,4,5,8-10} In this study 9 patients (75.0%) had primary type of SBV. A study done on an Afghan population showed marked increase in the incidence of primary SBV during Ramadan.¹¹ In our study, 9 patients (75.0%) with SBV gave a similar dietary history. Other studies reported a higher incidence of primary SBV in patients with a longer mesenteric length and shorter mesenteric base¹², and those with longer small bowel lengths.¹³ All our 9 patients (75,0%) with primary SBV had long mesentery of Jejunum and Ileum with narrow base. Our study also showed that primary SBV was much more common in males than females (ratio 7:2). This is consistent with findings in other studies.^{4,11,12,14-16} Secondary SBV in adults usually results from adhesions as shown in our study. Other possible predisposing factors include mesenteric defects (as noted in 1 patient in our series), presence of a stoma, or pregnancy.¹⁷⁻²⁰ Plain abdominal radiograph may show features of intestinal obstruction but does not provide any clue as to SBV. Computerized tomography (CT) scan may show twisting of the small bowel around the mesenteric vessels resulting in the “whirl sign”.^{21,22} The sensitivity of the CT scan in the diagnosis of SBV is 60% making it the most important diagnostic tool.²³ However we could not perform a contrast enhanced CT scan on any of our patients as it was not readily available. The overall mortality rate of 8.3% compares favorably with other studies with values ranging from 9% to 38%.^{4,14,24} The mortality rate for viable bowel in our study was 0% as compared to non-viable bowel which showed a higher mortality rate of 25.0%. This corresponds to findings in the other studies with mortality rate of 0% - 25% for patients with viable bowel and 17% - 100% for non viable bowel.^{4,14,24} This shows the importance of early surgical intervention in improving patient survival.

CONCLUSION

Small bowel volvulus is an unusual cause of intestinal obstruction associated with relatively high mortality, requiring early operative intervention to improve outcome.

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