

Sigmoid volvulus, acquired megacolon and pseudo-obstruction

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Abstract

This article is aimed at describing three common colorectal surgical emergencies that present as large bowel obstruction. Emphasis is given to sigmoid volvulus, acquired megacolon/megarectum and colonic pseudo-obstruction with respect to their clinical presentation and management including emergency treatment and any further elective treatment options once the emergency situation is resolved. In western society, these conditions are commonly associated with elderly and institutionalized patients posing significant management challenges. With increasing emphasis on emergency sub-speciality care provision, thorough understanding of these clinical conditions is essential to appropriately tailor the management to individual patient needs.

Keywords Acquired megacolon/megarectum; colonic obstruction; large bowel obstruction; Ogilvie's syndrome; pseudo-obstruction; sigmoid volvulus

Sigmoid volvulus

Definition

In general, volvulus describes the condition in which the bowel becomes twisted on its mesenteric axis resulting in partial or complete obstruction of the bowel lumen and a variable degree of impairment of its blood supply. Volvulus commonly affects: a redundant sigmoid colon (61%) due to its anatomy of long sigmoid mesentery with a narrow base, the right colon (34.5%) described as caecal volvulus (a misnomer), the transverse colon (3.5%) and very rarely the splenic flexure (1%).^{1,2}

Epidemiology

Accounting for 5–7% of emergency hospital admissions with colonic obstruction, sigmoid volvulus is relatively rare in North America and Europe. In Russia, sigmoid volvulus accounts for 50% of emergency admissions with a large bowel obstruction. In Iran, India and Africa, sigmoid volvulus is the most common cause for a large bowel obstruction. A typical European or North American patient with sigmoid volvulus is usually elderly, institutionalized and with multiple medical co-morbidities like dementia, Parkinson's disease, Alzheimer's and longstanding electrolyte imbalances and frailty. Sigmoid volvulus is more prevalent in males.

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Aetio-pathology

Sigmoid volvulus is permitted by an elongated segment of bowel accompanied by a lengthy mesentery with a narrow retroperitoneal attachment. This allows the two ends of the mobile colon to come together and twist around the narrow mesenteric base (Figure 1). Chronic constipation and treatment with psychotropic drugs may predispose to volvulus by affecting intestinal motility. High dietary fibre intake has been attributed to volvulus in developing nations. A twist of greater than 180° in the sigmoid mesentery can result in closed loop colonic obstruction if the patient has competent ileo-caecal valve. Volvulus impairs blood supply to the affected bowel leading to ischaemia. Bacterial fermentation of colonic contents in the closed loop results in further gas production and worsening colonic distension thus setting in a cascade of progressive ischaemia, bacterial translocation, systemic sepsis, segmental infarction, gangrene and perforation leading to generalized peritonitis and death.

Clinical presentation

Patients with sigmoid volvulus may present as acute or sub-acute intestinal obstruction. There is usually sudden onset of severe abdominal pain, obstipation and abdominal distension more dramatic than would be associated with other causes of colonic obstruction. Vomiting is usually a late feature. In the majority of patients, there may be a history suggestive of similar episodes which have spontaneously resolved with the passage of large quantities of flatus and faeces or hospitalization and various interventions to resolve the volvulus. The abdomen is usually markedly distended and tympanic. Severe abdominal pain, rebound tenderness and tachycardia are ominous signs as they are usually associated with either mural ischaemia from increased tension in excessively distended bowel wall or arterial occlusion caused by torsion of the mesenteric arterial supply.

Plain radiographic findings often enable prompt diagnosis in at least 75% of cases. Radiographs reveal a markedly distended air-filled sigmoid colon with its apex in the right upper quadrant – classically described as the 'coffee bean' sign (Figure 2). Proximal colon is usually dilated and if the ileo-caecal valve is incompetent there will be associated small bowel dilatation. Gas is usually absent in the rectum. An erect chest X-ray helps to exclude perforation if there is no pneumoperitoneum. In the case of any diagnostic uncertainty based on plain radiographs, a CT scan is recommended for a more certain diagnosis. CT scans reveal a characteristic mesenteric whirl. Even though not routinely used, a contrast enema typically demonstrates the point of obstruction with the pathognomonic 'bird's beak' deformity. Flexible endoscopy will help to confirm the diagnosis, treat the condition and more importantly, it will help to rule out other causes of large bowel obstruction.

Management

Once the diagnosis of sigmoid volvulus is established, initial management is aimed at resuscitation with correction of hypovolaemia and electrolyte imbalance. In almost all the patients in absence of perforation initial treatment is non-surgical intervention with a view to resolve the twist.³ This can be attempted either with a rigid or a flexible sigmoidoscope with controlled insufflation and advancement of scope beyond the point of obstruction to decompress the obstructed sigmoid colon. Sigmoidoscopic decompression is successful in 70–80% of cases in conventional practice.^{1,3}

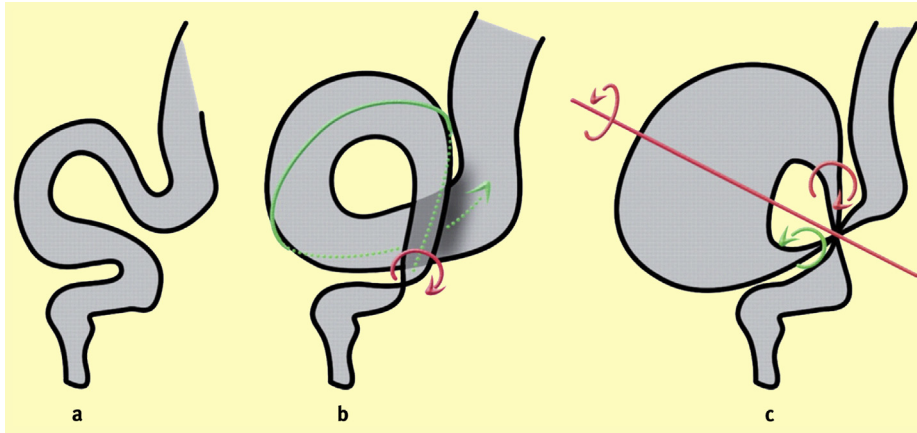


Figure 1 Sigmoid volvulus.

Once decompressed it is advisable to leave a flatus tube to maintain continuous drainage for 24–48 hours; this will also help to prevent immediate recurrence. It is strongly advised for the operator to wear protective clothing whilst attempting endoscopic decompression as de-rotation is associated with rapid egress of flatus and liquid stool. In patients with clinical, radiological or biochemical signs of peritonitis from perforation or gangrene of the colon if the patient is fit enough to withstand the surgical stress, treatment should be emergency surgery with simultaneous resuscitation. Emergency operative interventions in this group of patients are associated with higher morbidity and mortality. In one of the larger case series from Veterans' Affairs Hospitals, emergency surgery was associated with 24% mortality when compared to 6% in elective setting after emergency decompression of volvulus.¹

Surgical options

Recurrent sigmoid volvulus is common and can recur in 90%¹ of patients after first successful conservative de-rotation and decompression. Due to this high rate of recurrence, once the emergency is over surgical treatment should be considered in the

semi-elective or elective setting for suitable patients. The operation could be conducted through a small left lower quadrant incision or laparoscopic approach. As the elongated colon and mesentery require virtually no mobilisation, sigmoid resection with primary anastomosis is easily accomplished. However, the authors feel that it is important to excise the sigmoid loop and anastomose at the upper rectum to prevent recurrent volvulus following surgery. Colonoscopy should be considered before elective resection if there is any suspicion of an associated neoplasm. In fit patients it is feasible to proceed to surgery at the index admission once endoscopic decompression is successful.

When there is clinical peritonitis, endoscopic decompression is contra indicated and main stay of treatment is surgical intervention. Options in the emergency setting depend on the viability of the bowel, the patient's general and nutritional status and local expertise. Surgical options include the following.

- A primary sigmoid resection with anastomosis is the best option. A sigmoid resection with end colostomy and closure of rectal stump (Hartmann's resection), if conditions for a safe primary anastomosis are unfavourable.
- A double-barrel stoma as in Paul-Mikulicz's procedure.
- A subtotal colectomy with end ileostomy or ileo-rectal anastomosis, in case of non-viable colon (closed loop obstruction).

If the patient's general condition does not permit resection surgery or general anaesthesia, percutaneous endoscopic sigmoidopexy is a preferred option once sigmoid volvulus is decompressed. Elongated loop of sigmoid is triangulated and fixed using three-point endoscopic fixation using percutaneous endoscopic gastrostomy (PEG) tubes or button devices.

Idiopathic megabowel/acquired megacolon/megarectum

Definition

A subgroup of patients with intractable constipation has persistent dilatation of the bowel. In the absence of an organic cause this is termed idiopathic megabowel (IMB). This is associated with chronic abnormal dilatation of colon and rectum down to the level of anal sphincters. Dilatation may affect various parts of colon. If dilatation is confined to colon it is described as megacolon, if dilatation is confined to rectum it is described as megarectum and if dilatation involves both colon and rectum the condition is described as idiopathic megabowel.

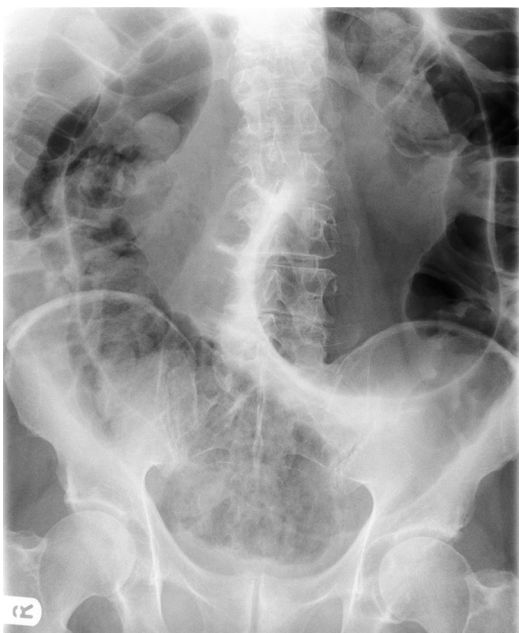


Figure 2 The 'coffee bean' sign.

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