

ASPECTS OF TREATMENT*

TREATMENT OF INTESTINAL VOLVULUS

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Introduction

INTESTINAL VOLVULUS INDICATES the twisting of a loop of bowel around the axis of its own mesentery. The small intestine and the sigmoid colon are the organs most likely to be involved, as volvulus occurs most frequently in those organs which are suspended from a narrow base and have a long, narrow mesentery¹. The incidence and the type of intestinal volvulus show marked geographical differences. Surgery is indicated for most patients presenting with this condition. The purpose of this paper is to present guidelines to the management of the various types of intestinal volvulus.

Clinical material

The case notes of 136 patients seen at Harari Hospital, Salisbury, Rhodesia, between January 1967 and December 1970 who were diagnosed as having intestinal volvulus were examined. The diagnosis was established by operative or autopsy findings, and in a few cases of sigmoid volvulus by radiology. The type of treatment, type of volvulus, operative technique, postoperative complications, and prognosis of each patient were recorded wherever such information was available.

Principles of treatment

The general principles of treatment that are common to all the main types of intestinal volvulus will be first discussed. The severity of the patient's condition will depend on the duration of symptoms, the extent of vomiting, whether or not the bowel has undergone gangrenous changes, and the presence or absence of other serious medical diseases.

Initial treatment consists of rapid correction of fluid, electrolyte, blood, and acid-base balance disturbances. If the bowel has undergone gangrenous changes, 3-6 units of blood may be required before and during the operative period.

*Fellows interested in submitting papers for consideration with a view to publication in this series should first write to the Editor.

If the portion of the bowel has been conclusively demonstrated to have undergone gangrenous changes, the appropriate segment with its mesentery must be occluded with large clamps and divided without allowing the loop to become untwisted. The sudden untwisting of a gangrenous loop of bowel may cause a precipitous fall in blood pressure². If it is concluded that the discoloured bowel could possibly recover, then adequate amounts of fluids must be rapidly administered intravenously to expand the intravascular compartment before an attempt is made to untwist the affected segment.

In the present series 51 patients presented with small-bowel, 2 with caecal, 56 with sigmoid, and 27 with ileosigmoid volvulus.

Small-bowel volvulus

In some cases it may be difficult at operation to determine whether or not the small intestine has undergone volvulus. The direction of entry of the terminal ileum to the caecum should be examined. Banerji³ pointed out that the terminal ileum of patients with small-bowel volvulus passes to the right upwards instead of downwards.

If the bowel is found to be viable, then the volvulus is untwisted. Banerji advises that the mesentery of the small intestine should be sutured to the posterior abdominal wall, but Jain and Seth⁴ do not consider this procedure helpful in reducing the frequency of recurrent volvulus. Gangrenous bowel is removed. The principles of bowel anastomosis will be discussed more fully in the section dealing with ileosigmoid knotting.

Agrawal and Misra⁵ reported on 29 cases of small-bowel volvulus; 6 of the 9 patients with gangrenous bowel and 5 of the 20 patients with viable bowel died following surgery. The mortality was particularly high in those patients who were less than 10 or more than 50 years of age. In the present series, out of 51 patients, 4 patients died before surgery could be undertaken and 3 after surgery. The 3 deaths occurred in patients in whom the strangulated bowel was considered sufficiently viable at the time of operation and was untwisted without performing a resection. In 10 patients with gangrenous bowel a partial resection of the small intestine was performed; their postoperative course was relatively uneventful and all survived. In only 3 of these 10 patients was the resection considered to be massive—a much lower percentage than that encountered in ileosigmoid volvulus.

Caecal volvulus

If the caecum shows gangrenous changes at laparotomy a right hemicolectomy is performed. Some controversy exists as to the correct

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treatment that should be recommended for caecal volvulus when the bowel is viable. If the caecum is only untwisted, then recurrence is very likely^{6, 7}. Caecopexy has not proved successful in preventing recurrence⁸, and should perhaps be reserved for those patients who have viable bowel but who are unfit for resection. In the absence of any published prospective studies on the surgical treatment of caecal volvulus I consider that if the operation is performed by a senior surgeon a right hemicolectomy is the operation of choice in fit patients (even though the bowel is viable). If the cut ends of bowel are of uncertain viability or if the general condition of the patient causes concern, the terminal ileum should be brought out as an end ileostomy and the distal cut end closed with a purse-string suture. The ileostomy can be closed 3–6 weeks later if the general condition of the patient is satisfactory.

Sigmoid volvulus

Patients with sigmoid volvulus require emergency colectomy if the bowel is judged clinically to be strangulated or if the distended colon cannot be deflated. The site of transection of the proximal sigmoid should be carefully determined, as a short length of bowel may result in difficulty in constructing the colostomy. I prefer to leave an additional 2 or 3 inches (5–7.5 cm) of sigmoid in order to allow adequate traction of bowel during performance of the end colostomy. The excess bowel can be trimmed before sutures are inserted in the mucocutaneous layer of the everted colostomy.

In the present series emergency sigmoid colectomy with colostomy was performed on 7 patients with gangrenous and a similar number with viable sigmoid colon. In these 14 patients the distal cut end was closed with a purse-string suture and returned to the peritoneal cavity (Hartmann's procedure). The colostomy was usually closed 2–3 weeks after the first operation if the general condition of the patient was satisfactory. There was only one death in this group of patients (7%). These results were compared with 15 patients with viable bowel and one with gangrene who underwent emergency sigmoid colectomy and primary anastomosis. Although there were fewer patients with gangrenous bowel in this group there were 4 deaths (25%).

In a collective review of the literature 17 out of 202 patients with viable bowel (8.4%) died in the early postoperative period following emergency colectomy and primary bowel anastomosis. In those reports in which both viable and gangrenous bowel were included in the analysis the mortality rate exceeds 25%^{9, 10}. Exteriorization of the bowel (Miculicz) was recommended as the operation of choice by Kohn *et al.*¹¹ The disadvantages of the Miculicz procedure are that the rectum may undergo necrosis due to traction on the superior rectal vessels, the rectum may retract, and it may be difficult to exteriorize this part.

Shepherd¹² noted that 11 out of 30 patients with gangrenous bowel (36.7%) and 5 out of 35 with viable bowel (14.3%) died after treatment with the Miculicz operation. Laparotomy and detorsion have been found to be unsatisfactory owing to the large number of patients who subsequently develop recurrent volvulus. Similarly disappointing results have been noted after operative detorsion combined with internal fixation¹³.

In the great majority of cases of sigmoid volvulus the massively distended loop of bowel can be adequately deflated by means of a flatus tube inserted through a sigmoidoscope. Bowesman¹⁴ and Shepherd¹² strongly advocate conservative treatment by deflation as the only definitive treatment of patients who are clinically judged to have viable bowel and in whom deflation can be achieved. Bowesman was able to reduce 90% of cases presenting during the first day, 75% on the second day, and 30% on the third day. One disadvantage of this method is that gangrenous bowel may be overlooked and the sigmoid may have perforated. The main objection to conservative treatment, however, is the high rate of recurrence, which on each occasion is associated with a mortality approaching 10%.¹²

I prefer to deflate the sigmoid colon, and if the procedure is successful, the rectal tube is sutured to the skin of the thigh for 2–3 days. The colon is prepared by bowel enemas and neomycin administration, after which sigmoid colectomy and primary bowel anastomosis are performed. Conservative treatment without surgery is reserved for patients who suffer from serious medical disease, children, very old and feeble patients, and those who adamantly refuse surgery before treatment is started.

Ileosigmoid knotting

This type of volvulus (syn: compound volvulus) is rare in Britain and the United States but commonly encountered in certain parts of Africa. Between May 1969 and January 1972, 21 cases of ileosigmoid volvulus came under my care. This represents an incidence exceeding 7 cases annually, which would appear to be the highest figure recorded in the literature.

The principles of management are essentially those outlined for small-bowel and sigmoid volvulus. Laparotomy is performed as soon as adequate resuscitative measures have been instituted. The sigmoid colon is removed in all cases and a Hartmann procedure is performed. If the small intestine shows gangrenous changes, the affected portion is removed and bowel continuity restored. If the divided end of the terminal ileum is only 1–2 inches (2.5–5 cm) in length I prefer to close the ileal segment and suture the proximal cut end to the caecum. I have noted,

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as has Shepherd¹², that anastomotic leakage occurs in a large number of patients who have had the proximal bowel sutured to a small segment of ileum. In the present series one patient died before and 6 of the remaining 26 patients died during or after surgery. The overall mortality of patients with ileosigmoid volvulus was 25.9%. In a much larger series covering a total of 92 cases among patients in Uganda the mortality reached 54%; 23 patients with ileosigmoid knotting had a partial resection of the small intestine and in 16 more than half of its length was removed. These patients require careful follow-up studies to detect, and correct when necessary, nutritional deficiencies that may arise.

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THE FOLLOWING LECTURES will be given at 8.0 p.m. in the Liverpool Medical Institution. Coffee will be served at 7.30 p.m. All medical staff are welcome.

1973

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1974

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