

# Recurrence of Volvulus after Sigmoidectomy\*

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SIGMOID VOLVULUS is a potentially lethal form of colonic obstruction that can usually be decompressed nonoperatively. Decompression is generally accomplished by sigmoidoscopy and rectal tube insertion. An emergent abdominal operation is necessary only if gangrene is suspected or if nonoperative decompression fails.

After successful nonoperative decompression, there is a well-recognized propensity for recurrence of volvulus. To prevent this, interval sigmoidectomy is usually recommended. When the sigmoid volvulus is a complication of megacolon, sigmoidectomy may be an inadequate operation.

## Report of Cases

**Patient 1:** A 47-year-old man underwent transabdominal resection of sigmoid volvulus on February 6, 1958, after abdominal cramping and constipation for one week. There had been similar abdominal cramps in 1953 and in 1955 at which time barium-enema contrast study showed only a redundant colon. On February 19, elective sigmoid colectomy was performed to prevent recurrent volvulus.

In August 1962, the patient was readmitted because of severe cramping, tenderness, and rigidity of the abdomen. Roentgenography, including barium-enema contrast study (Fig. 1A), indicated sigmoid volvulus. At operation there was a distended and twisted loop of distal left colon, resembling his former sigmoid volvulus. A distended loop of ileum was twisted around the base of the colonic loop (Fig. 1B). Both distended loops were gangrenous and had to be resected. The ileum was reanastomosed by an open method and the colon by a closed method. The surgeon noted that the gangrene extended so close to the rectum that a Mikulicz anastomosis was impossible.

A stricture subsequently developed at the colonic anastomosis and this was resected with open reanastomosis under protection of a transverse colostomy. The colostomy later prolapsed and at its closure an additional 30 cm of transverse colon was excised.

Barium-enema contrast study one year later was interpreted as showing a normal postoperative colon of large diameter (Fig. 1C). Later abdominal roentgenograms, obtained usually during multiple admissions for alcoholism, have continued to show large amounts of gas in a dilated colon, but no further operative treatment has been necessary.

**Patient 2:** In January 1960, a 52-year-old man had decompression of sigmoid volvulus by a rectal tube inserted at sigmoidoscopy after one week of abdominal distention and discomfort. Two weeks later 60 cm of sigmoid colon were resected. Bowel function was subsequently fairly normal.

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On June 4, 1969, he was readmitted after two days of abdominal distention. Roentgenography disclosed a volvulus of the left colon. Barium-enema contrast study (Fig. 2) and sigmoidoscopy (for decompression) disclosed that the twist was higher than in most patients and the volvulus probably included the splenic flexure. The rectal tube was left in place for five days. Three days after its removal, volvulus recurred and again decompression was performed at sigmoidoscopy with a rectal tube.

On June 18, 1969, surgical exploration was performed with the rectal tube still in place. The entire colon was relatively large and redundant. The mesocolon was long; the flexures were indefinite. The colon was excised from the hepatic flexure as far distally as permitted by the Mikulicz type of anastomosis. After crush of the spur, bowel movements were almost entirely by rectum and the patient deferred closure of the colostomy site for three years. To date, no additional colonic surgery has been required.

**Patient 3:** A 61-year-old man underwent nonoperative decompression of sigmoid volvulus at sigmoidoscopy in February 1975 at another hospital. The patient was semicomatose and had urinary retention. He was described as cachectic, dehydrated, deaf, and incoherent with slurred speech. Barium-enema contrast study in March 1975 showed a greatly dilated colon. After recurrence of sigmoid volvulus treated by nonoperative decompression, the patient underwent elective sigmoidectomy in September 1975.

In January 1976 the patient had two episodes of recurrent distal left-sided volvulus. Decompression via sigmoidoscopy was undertaken each time. Later that month he was first treated at this hospital for seizures due to hypoglycemia. Barium-enema roentgenography showed colonic ileus and dilatation.

In October 1976 the patient had a massive fecal impaction that was removed manually and sigmoidoscopic decompression of a partial volvulus. One week later (one year after sigmoidectomy) barium-enema roentgenography disclosed the left colon to be large and redundant (Fig. 3A). There were other episodes of volvulus in April and May of 1977. All episodes were relieved by combinations of manual removal of rectal feces, enemas, and sigmoidoscopic decompression.

In June 1977 the patient had a right transverse colostomy, which was performed instead of re-resection because of his precarious general condition. Subsequent roentgenography (Fig. 3B) disclosed persistent dilatation of the lower colon. He died from unrelated cause one year later in a nursing home.

## Discussion

The transabdominal detorsion and the later closed anastomosis after emergent colonic resection in the first patient and the Mikulicz type of anastomosis in the second patient would not now be standard procedure for sigmoid volvulus in our hospital. Present pol-

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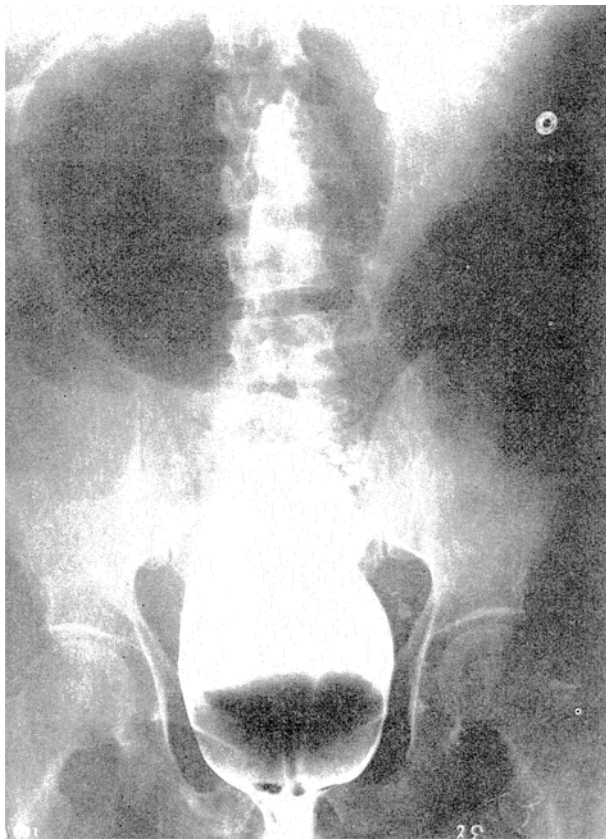


FIG. 1A. (above, left) Patient 1. Recurrence of volvulus, sigmoid location, four years after sigmoidectomy.

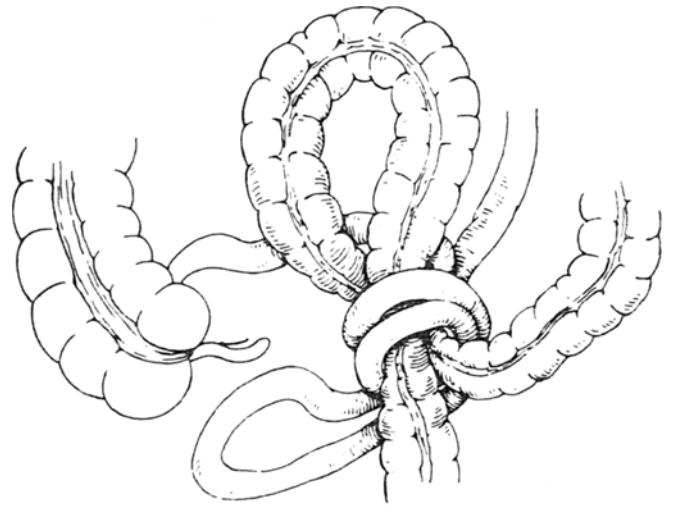


FIG. 1B. (above, right) Patient 1. Artist's depiction of operative findings (ileosigmoid knotting).



FIG. 1C. (below) Patient 1. Residual colon after four partial resections.

icy is sigmoidoscopic nonoperative decompression (unless gangrene is suspected) and interval operation to prevent recurrence except in very poor risk patients. After colonic resection, we prefer reanastomosis by an open method. However, in the case of a poorly prepared bowel in an elective procedure or for an emergency operation, we favor end colostomy after resection as a first stage (Hartmann procedure).

Nonoperative decompression, usually performed via a well-lubricated tube inserted at sigmoidoscopy, has a high success rate with few complications.<sup>1,2,4,8,16,23</sup> Urgent abdominal operation is necessary only when nonoperative decompression fails or when gangrene is suspected. However, the incidence of recurrence of volvulus after nonoperative decompression, manual detorsion, or manual detorsion and sigmoidopexy is significant.<sup>1,2,4,7,8, 16,17,23</sup> Resection of the redundant sigmoid loop is usually considered the minimally effective operation in preventing recurrence.

Patients with sigmoid volvulus are generally elderly and debilitated. The operative mortality from elective sigmoidectomy has been reported as 6 per cent<sup>14</sup> and 15 per cent.<sup>1</sup> Some authors contend that the threat of gangrene during a repeat episode of volvulus is not great and therefore that the risk of recurrent sigmoid volvulus is less than that of interval sigmoidectomy.<sup>1</sup> Surgeons supporting this opinion recommend interval sigmoidectomy only when the patient is young and at low risk, or after recurrence of sigmoid volvulus. They may even treat some patients with repeated nonoperative decompression. Most surgeons, how-

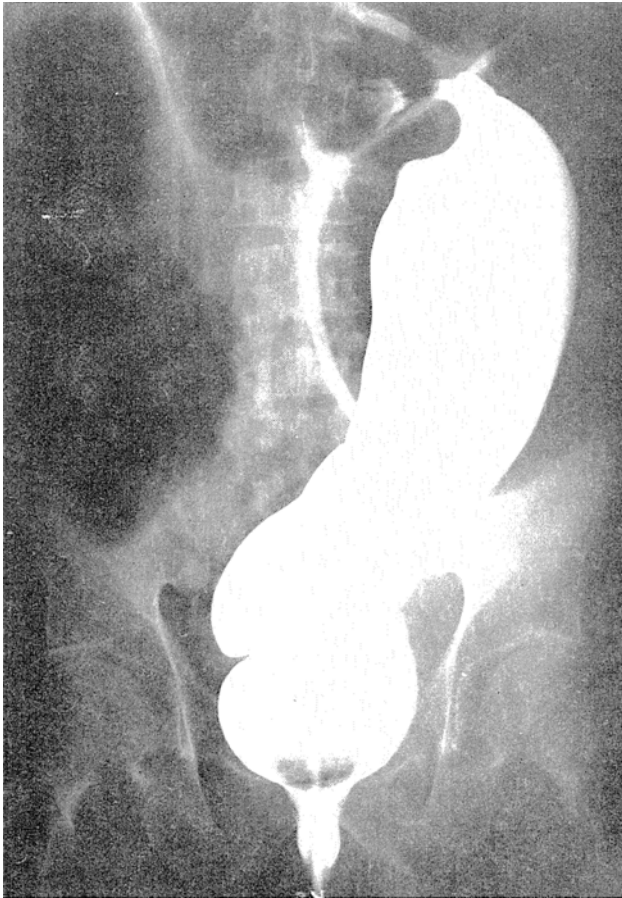


FIG. 2. Patient 2. Recurrence of volvulus nine years after sigmoidectomy. Note that the twist is more proximal than in Patient 1.

ever, recommend interval sigmoidectomy after the first episode of volvulus except in those patients in whom operative risk is prohibitive.<sup>4, 8-10, 14, 22, 23</sup>

Only infrequently is inadequacy of sigmoidectomy documented. There are isolated reports of transverse colon and/or splenic flexure volvulus following sigmoidectomy.<sup>5, 11, 13, 16</sup> More significantly, there are isolated reports of "recurrent sigmoid volvulus" after sigmoidectomy such as we noted in our patients.<sup>14, 23</sup>

In Brazil, sigmoid volvulus is common, occurring predominantly in areas where megacolon due to endemic Chagas' disease is widespread. The patients tend to be relatively young and have subacute or chronic manifestations of volvulus. Only infrequently is ischemia of the sigmoid loop noted. Sigmoid volvulus in that country is recognized usually as a complication of megacolon, and interval operation is directed toward treatment of the megacolon.<sup>6</sup>

The Brazilian experience, which usually involves megacolon of aganglionic type, cannot be directly equated to the problem with sigmoid volvulus in this country. The association of megacolon with sigmoid

volvulus in patients in the United States is hard to quantitate, partly because of the varying degrees of chronic dilatation in the remainder of the colon found in these patients. The association seems significant, however, and in one report was estimated at above 60 per cent.<sup>9</sup>

Most megacolon occurring in adults in the United States is acquired and is associated with a long history of chronic constipation and failure to observe the defecatory urge, resulting in marked impairment of tone and sensation. Dilatation in such patients extends to the anus with the rectum being very large as opposed to the typical finding in Hirschsprung's disease. Occasionally, megacolon in an adult<sup>18, 19</sup> may represent a mild form of Hirschsprung's disease<sup>7, 9</sup> or another form of ganglionic deficiency. Neurogenic lesions as well as the prolonged use of anticholinergic drugs have also been shown to be causative factors.<sup>3</sup>

The high incidence of serious associated diseases<sup>1, 23</sup> primarily cardiovascular, in patients with sigmoid volvulus and their consequent short life expectancy decreases the potential incidence of recurrent volvulus after sigmoidectomy. Two of our patients had recurrence only after four years and after nine years and other very late recurrences have been documented.<sup>11, 13, 16</sup> In two of our patients, the recurrence appeared as a chronic condition. The other patient had ischemia. This case was complicated by the twisting of an ileal loop around the base of the twisted colonic loop and gangrene of both loops. This represents an instance of complicated volvulus, sometimes called ileo-sigmoid knotting.<sup>15, 20</sup> Others have reported gangrene in recurrence of volvulus after sigmoidectomy.<sup>5, 11</sup>

The incidence of recurrent sigmoid volvulus after sigmoidectomy for volvulus has been reported as 10 per cent<sup>14</sup> and 22 per cent.<sup>23</sup> Review of the literature, as well as evaluation of our own experience, indicates that recurrence, possibly serious, may occur fairly frequently in those patients who live long after sigmoidectomy. Most such recurrences have been attributed to associated megacolon and this seemed evident in our patients.

In an elderly, debilitated patient, the advantage of interval operation as opposed to repetitive, nonoperative decompression may be marginal. In such patients, extension of colonic resection much beyond sigmoidectomy may be inappropriate, especially if associated megacolon is not chronic and severe or if freeing the splenic flexure promises to be difficult. Total sigmoidectomy may be sufficient in such patients. In the younger, relatively good-risk patient and with severe associated megacolon, however,



FIG. 3A. (left) Patient 3. Left colon one year after sigmoidectomy.

interval operations should attempt to palliate the associated megacolon.

The operation for megacolon in the adult is not standardized, and reports range from pessimistic<sup>18</sup> with any type of operation to optimistic with varying degrees of colonic resection. Subtotal colectomy with ileoproctostomy has been suggested<sup>4,14,21</sup> and may be indicated in selected, younger patients. That operation may be followed by annoying, frequent bowel movements in older patients and potentially may increase operative mortality. Cecoproctostomy has been suggested to minimize morbidity.<sup>12,18,19</sup> Certainly, before undertaking any of these extensive resections, it is necessary to determine that the rectum retains some sensation of distention, that the anal musculature is competent, and that the problem is not aganglionic megacolon.<sup>19,21</sup>

In most patients treated for sigmoid volvulus by interval operation in recent years, we have compromised on left hemicolectomy, including generous segments of the transverse colon. This procedure has low potential for increasing operative mortality over



FIG. 3B. (right) Patient 3. Residual dilatation two months after colostomy.

sigmoidectomy and appears to minimize symptoms of any associated megacolon without undue risk of excessive morbidity. Determination of its efficiency in preventing recurrent volvulus awaits prolonged follow up.

### Summary

Three patients had recurrences of left-sided colonic volvulus after allegedly total resections of redundant sigmoid loops. All three patients had chronic, acquired megacolon. Other instances of late recurrence of volvulus after sigmoidectomy are documented in the literature.

Sigmoidectomy may be an inadequate operation for sigmoid volvulus in younger patients and/or in patients with severe chronic megacolon. The decision to perform an interval operation and the selection of the type of operation must take this into account.

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### Memoir

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Dr. Herald was elected to membership in the American Society of Colon and Rectal Surgeons in 1948 and elevated to Fellowship in 1968. He was a member of the American Medical Association, Ohio State Medical Society and Mahoning County Medical Society. Prior to his retirement in 1976, he was on the staffs of Youngstown and St. Elizabeth's Hospitals, Youngstown. Dr. Herald died January 30, 1979.