Sigmoid Volvulus with and Without Megacolon*

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Sixty-six consecutive patients, admitted to St. Vincent's Hospital, Melbourne, with sigmoid volvulus, fell into two groups, 60 without and six with acquired megacolon. In the former group, flatus tube decompression was usually successful, and sigmoid resection provided a cure. In the group with megacolon, the history was longer; patients more often had bowel symptoms before or between acute episodes of volvulus; flatus tube decompression was rarely successful; and symptoms persisted after sigmoidectomy and were sometimes associated with recurrence of volvulus of the new "sigmoid." It seems that nothing less than total colectomy will cure these patients. [Key words: Volvulus, sigmoid; Volvulus, recurrent; Megacolon; Flatus tube decompression; Sigmoidectomy; Colectomy, total]

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Two OF of the 42 cases of idiopathic megacolon reported by Lane and Todd[1] in 1977 had histories of sigmoid volvulus. Prompted by personal experience with such a patient in 1978 (not treated at St. Vincent's), I decided to see whether our hospital records supported the hypothesis that there are two kinds of sigmoid volvulus, one with and one without megacolon.

Materials

From January 1, 1959 to December 31, 1978 (20 years), 66 adults were admitted to St. Vincent's Hospital, Melbourne, with sigmoid volvulus. There were 33 men and 33 women. Their mean age was 66.7 years (range 36–88 years). In the same period, there were 18 admissions with cecal volvulus. Twelve patients died (18 per cent mortality rate), four patients had gangrene of the sigmoid loop, and three of these died.

Characteristic features of these patients admitted with sigmoid volvulus were: one or more previous episodes (for 18 of 66); complaints of distention, colic, constipation, and vomiting; generalized abdominal distention, sometimes with tenderness and/or a palpable mass; empty rectum; large sigmoid loop on x-ray (Fig. 1); and volvulus at operation or autopsy.

FIG. 1. X-ray of the abdomen showing acute sigmoid volvulus (Case 13).

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TABLE 1. *Emergency Operations for Sigmoid Volvulus 1959–1978*

	Number	Deaths
Laparotomy and detorsion	9	1
Detorsion and colostomy	2	
Detorsion and colopexy	1	
Resection without anastomosis*	14	4
Resection with anastomosis (proximal colostomy in one case)	6	2
TOTAL	32	7 (22 per cent)

* There were two perforated and two gangrenous colons in this group, with three deaths.

Emergency operations were carried out in 32 of 66 patients (Table 1) with seven deaths (22 per cent mortality rate). The highest death rate was in the resection group, partly explained by the fact that in two patients the colon had perforated and two other colons were gangrenous. There were two deaths after six immediate resections with anastomosis, though these colons were not gangrenous or perforated, suggesting that immediate anastomosis is risky. There was only one death after 43 elective operations (Table 2). Looking at the emergency operations in another way (Table 3), the death rate in cases of volvulus with viable colon was twice as high when resection was carried out as when simple detorsion was performed. In cases of nonviable volvulus, of course, there was no choice but to resect the bowel.

Conclusions from this retrospective study must be that nonoperative compression is preferable, if possible, and at emergency operation one should merely perform detorsion unless gangrene or perforation demand resection.

Sigmoid Volvulus With Megacolon

Retrospective diagnostic criteria adopted for this supposed entity were: persistence or recurrence of symptoms after resection for volvulus; radiologic dilatation of remaining colon after resection for volvulus. By these criteria, there were six cases of "volvulus with megacolon" and 60 cases of what we may call "simple volvulus."

TABLE 2. *Elective Operations for Sigmoid Volvulus*

	Number	Deaths
Laparotomy and detorsion	1	
Laparotomy and colopexy	3	
Resection without anastomosis	4	
Resection with anastomosis (proximal colostomy in two cases)	20	1
Closure of colostomy	15	
TOTAL	43	1 (2.3 per cent)

TABLE 3. *Emergency Operations for Sigmoid Volvulus*

	Number	Deaths*
Nonresection procedures	12	1 (8)
Resection of nongangrenous nonperforated sigmoid†	16	3 (19)
Resection of perforated or gangrenous sigmoid	4	3 (75)
TOTAL	32	7 (22)

* Per cent values are given in parentheses.
† Twice the mortality of nonresection.

Comparing these two groups, it soon became obvious that there were other differences between them. Four of the six patients with megacolon volvulus had histories of a year or more compared with 13 of 60 patients with simple volvulus. All of those with megacolon-volvolus had bowel symptoms before or between episodes of sigmoid volvulus, compared with 16 of 60 simple volvulus cases. Five of the six megaco-

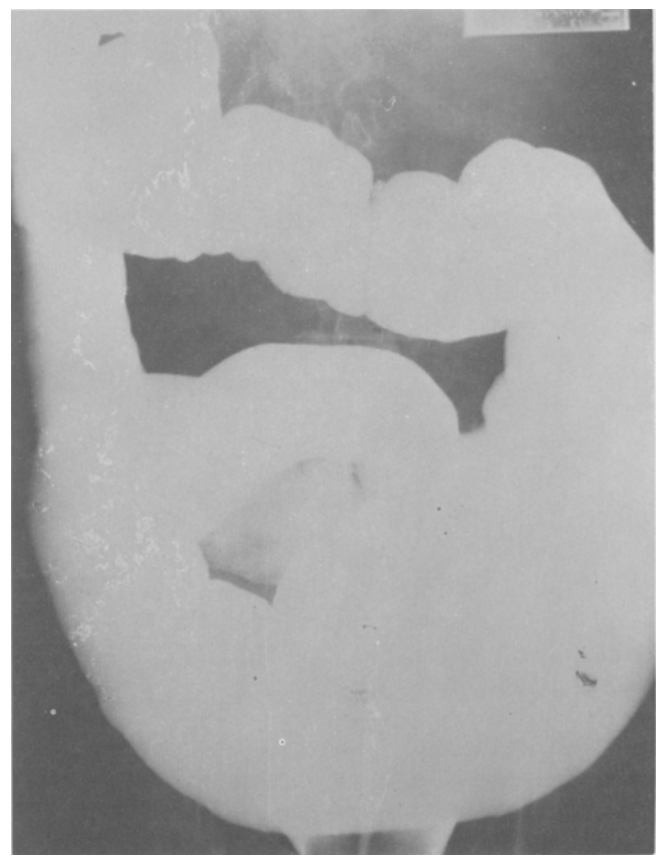

FIG. 2. Barium-enema x-ray showing colon dilatation down to anorectal ring (Case 19).

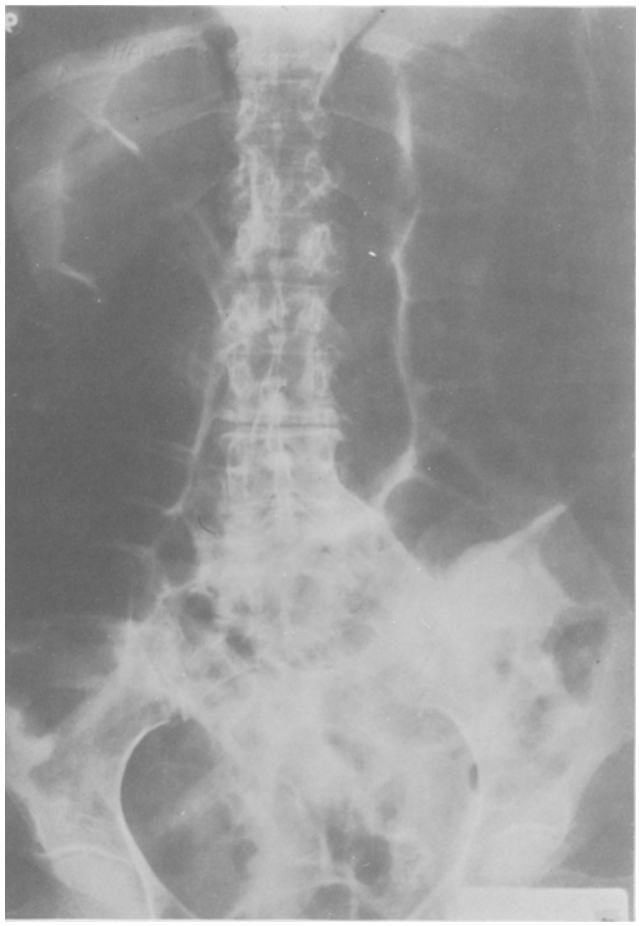

FIG. 3. X-ray of the abdomen showing colon dilatation three years after sigmoid colectomy (Case 10).

lon-volvulus patients showed dilatation of the colon proximal to the sigmoid on abdominal and/or barium-enema x-ray (Fig. 2) compared with 22 of 60 simple volvulus cases (Fig. 3). Lane and Todd[1] found proximal colon dilatation in 75 per cent of patients with idiopathic megacolon.

Patients in both groups differed also in their response to treatment. Flatus tube decompression was completely successful at once in 17 of 28 patients with simple volvulus for whom it was attempted (Figs. 4 and 5) but successful in only one of five patients with megacolon.

Follow-up of 30 survivors of resection for simple volvulus showed that 17 were completely successful with no recurrence of symptoms, whereas all six of those followed up after resection for megacolon-volvulus had further symptoms (Table 4). Figures 3 and 6 show radiologic bowel distention three years after resection in the first case and ten years after resection in the second.

Report of a Case of "Megacolon-Volvulus"

A 40-year-old woman described, on January 23, 1978, episodes of constipation with passage of flatus only, followed by severe colic with abdominal distention, then by passage of frequent liquid stools with frequent vomiting, for 18 months, each cycle of symptoms ending with passage of a satisfactory stool and temporary relief. Almost immediately, the cycle would be repeated. Symptoms were aggravated by use of purgatives. She had lost no weight.

On clinical examination, there was abdominal distention with active bowel sounds. Sigmoidoscopy showed a dilated rectum with redundant folds of normal mucosa. X-ray of the abdomen (Fig. 7) showed a huge sigmoid loop extending to the right upper abdomen. Barium-enema examination (Fig. 8) confirmed these features and showed narrowing at the base of the sigmoid and distention of the rectum down to the anal canal.

Upon a diagnosis of subacute sigmoid volvulus, she was operated upon on January 26, 1978. At operation, the sigmoid loop was 12 cm in diameter and 50 cm long. Scarring at the base of the sigmoid mesocolon suggested recurrent volvulus, and sigmoidectomy was performed, anastomosing undistended descending colon to upper rectum. The right colon and transverse colon were moderately dilated. Histologic examination showed normal bowel wall with ganglion cells and, in places, muscle hypertrophy.

The patient remained well for three weeks after operation, but her bowels then failed to open for the next three weeks, and symptoms returned exactly as before. On March 23, 1978, x-ray of the abdomen (Fig. 9) again showed gross distention of the whole colon as far as the anal canal. She was treated at home with lactulose, double disposable enemas three times a week, but eventually was admitted to the hospital on April 13, 1978, and treated for eight days with twice-daily enemas, lactulose 30 ml three times a day and Coloxyl® (dioctyl sodium succinate) with danthron, three tablets at night, in addition to double Travad® (anhydrous sodium dihydrogen phosphate 13.9 g, disodium hydrogen phosphate anhydrous, 3.18 g, benzoic acid, 0.1 g in each 100 ml) 130-ml disposable enemas twice a week. It was eventually concluded that

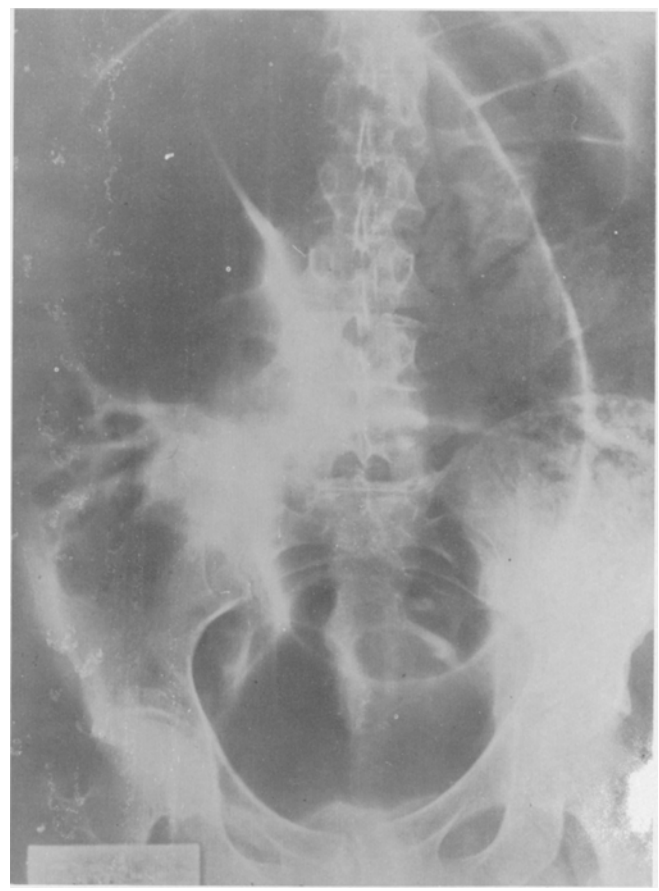

FIG. 4. X-ray of the abdomen showing acute sigmoid volvulus (Case 3).

FIG. 5. X-ray of the abdomen after successful flatus tube decompression of volvulus (Case 3).

although she originally presented with attacks of abdominal pain and diarrhea, her pattern of symptoms most suggested the idiopathic adult megacolon syndrome described by Lane and Todd.[1] Total colectomy with ileorectal anastomosis at 8 cm from the anus was performed on June 27, 1978. At operation the new "sigmoid" colon was grossly distended just as before, down to and including the whole rectum. The remainder of the colon was distended, but less so. The flexures were low and the right and left colon were on mesocolons.

On September 4, 1979, laparotomy and division of adhesions causing strangulating small-bowel obstruction were performed but, apart from that episode, she remained well (as of December 1981) with no recurrence of symptoms.

Discussion

The cause of adult idiopathic megacolon remains obscure. Full-thickness rectal biopsy is required to exclude Hirschprung's disease[1] or rare destructive lesions of the myenteric plexuses. Full-thickness rectal biopsy was rarely performed for patients at St. Vincent's Hospital, but all of those patients subjected to resection showed normal myenteric plexuses in the resected specimens. Lane and Todd[1] suggest ". . . a progression of events whereby the bowel wall becomes hypertrophied in an attempt to overcome chronic faecal overloading but after many years this compensatory mechanism fails, the bowel wall atrophies and distension recurs." One of the most striking features of megacolon-volvulus (see above) is the failure of decompression by flatus tube, probably due to this bowel atony.

TABLE 4. *Recurrent Problems After Resection of Sigmoid Volvulus With Megacolon*

Case Number		Follow-up Time
2	Persistent mucous diarrhea	6 months
10	Recurrent episodes of distention	1 year
19	Recurrent episodes of distention and constipation	3 years
26	Subsequent volvulus of "new" sigmoid requiring further sigmoid colectomy	12 years
31	Recurrent episodes of distention, constipation, fecal impaction	10 years
45	Daily enemas required for severe constipation and distention	1 month

Shepherd[3] again draws attention to the association of megacolon with mental disturbances. Seven of

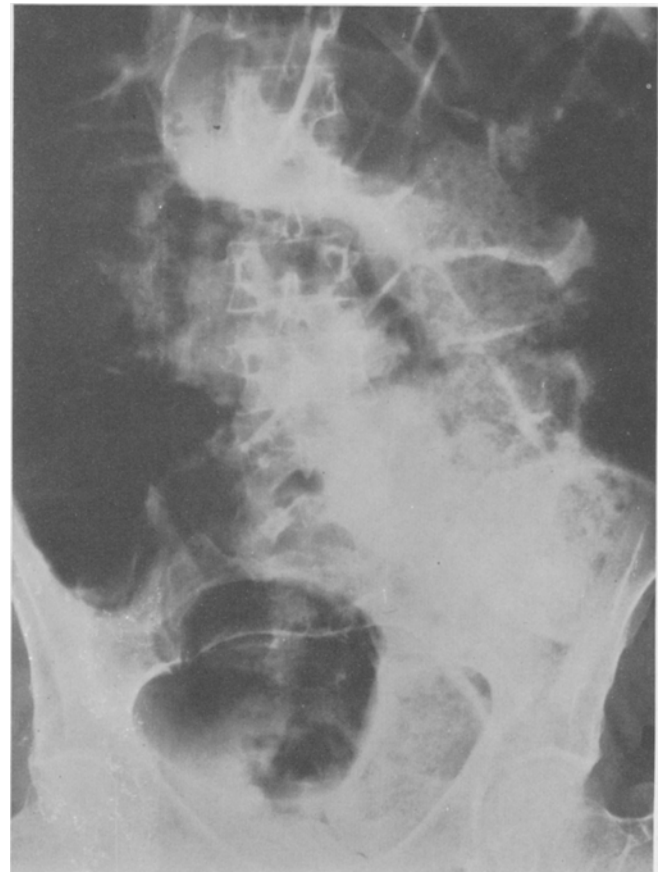

FIG. 6. X-ray of the abdomen showing colon dilatation ten years after sigmoid colectomy for volvulus (Case 31).

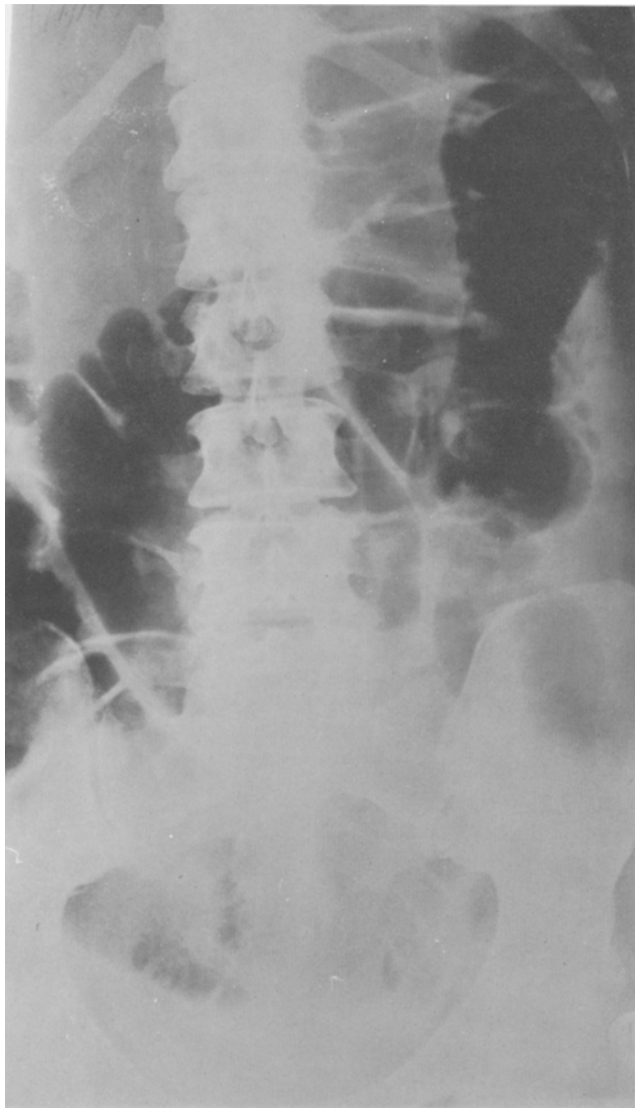

FIG. 7. X-ray of the abdomen showing subacute sigmoid volvulus.

Lane and Todd's[1] 42 patients were mentally subnormal, and two had a personality disorder. No particular mental disorder was found in any of the six megacolon-volvulus patients at St. Vincent's, though the other patient whose case is reported herein was a little obsessed with her bowel problems—perhaps naturally enough in view of their severity!

Lane and Todd[1] make the point that sigmoid colectomy is generally inadequate to relieve the symptoms of adult idiopathic megacolon, which affects the proximal colon in 75 per cent of patients. Only one of six of his patients subjected to sigmoid colectomy had a successful outcome and, in that patient, colonic dilatation was confined to the rectum and sigmoid colon. When the whole colon was dilated, ". . . the more extensive the colonic resection the better were the results." Five of seven who had colectomy and ileorectal anastomosis remained symptom-free afterwards. Two patients who previously had had resection for sigmoid volvulus later had colectomy and ileorectal anastomosis carried out, with partial success. Lane and Todd[1] do not describe any patient who had subsequent "sigmoid volvulus" after sigmoid resection, as in Case 26 at St. Vincent's, but Shepherd[3] mentions such a case, and Harbrecht and Frey[4] describe three.

It may be that some of these patients with idiopathic megacolon have abnormally increased internal sphincter tone,[5] and some may benefit merely from internal sphincterotomy. However, it is unlikely that patients with well-established megacolon, even if that were the original cause, will be relieved of symptoms by this simple procedure.

Regarding megacolon-volvulus, the point this article makes is that it is a different entity which requires different management (see flow chart, Fig. 10). The important thing is to be aware of its existence and not to treat such cases as "simple volvulus." With patients presenting with sigmoid volvulus, one should suspect megacolon-volvulus when the history is long; bowel symptoms are present before or between acute episodes; the proximal colon is dilated on abdominal or barium-enema x-ray; and little or no relief is obtained with flatus tube. After sigmoid resection, one

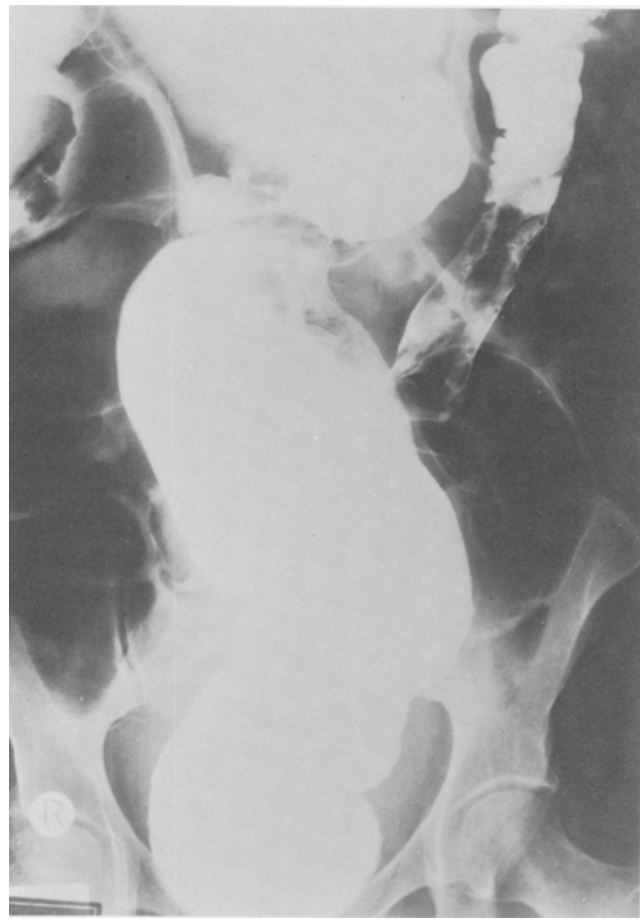

FIG. 8. Barium-enema x-ray showing subacute sigmoid volvulus with "parrot beak" deformity.

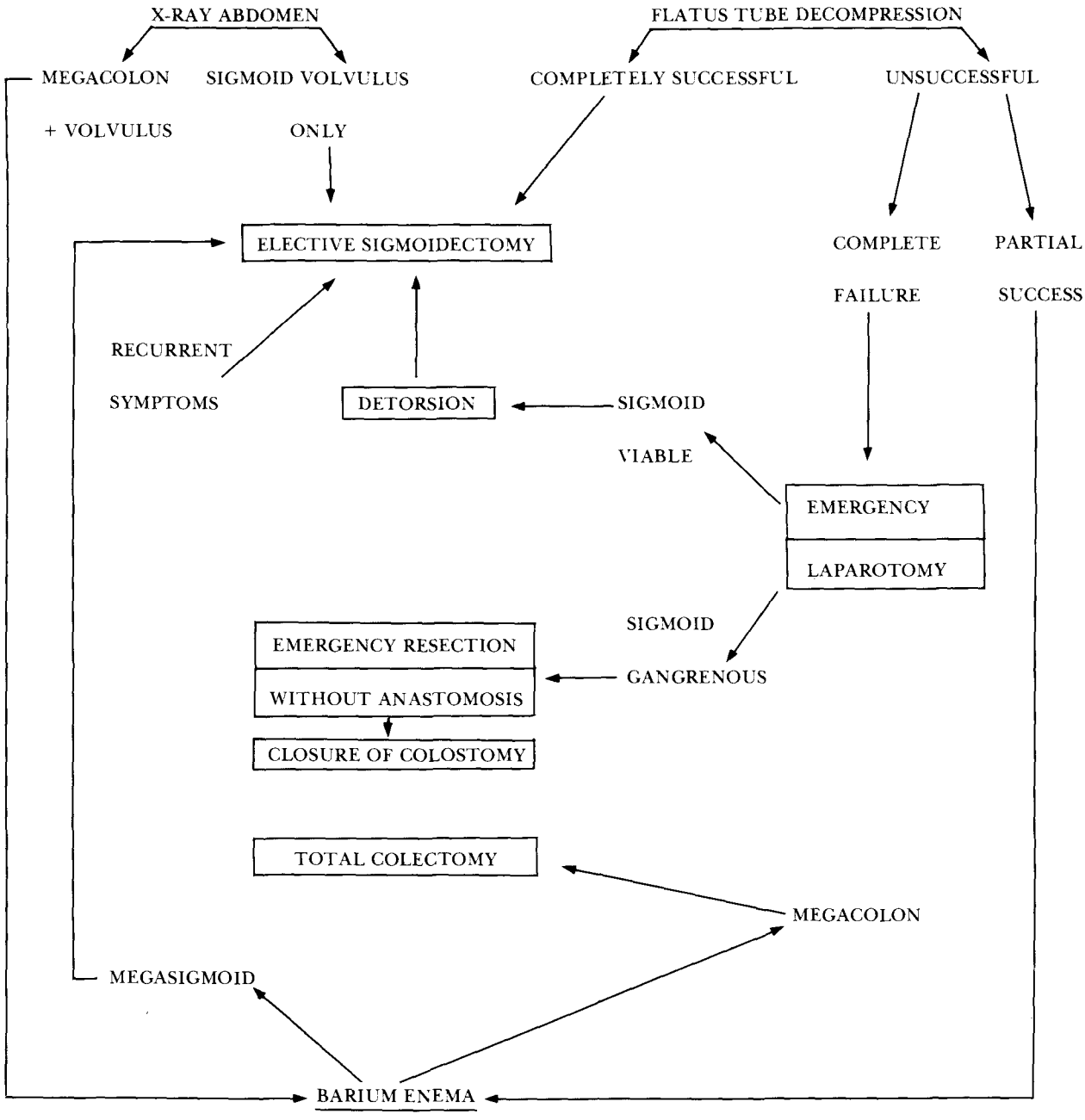

FIG. 10. Flow chart for sigmoid volvulus.

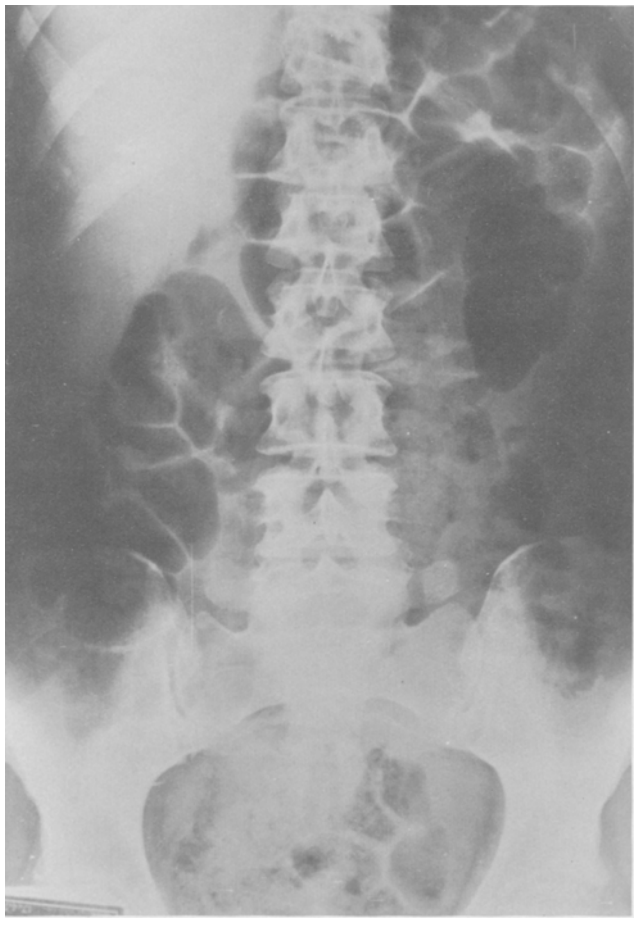

FIG. 9. X-ray of the abdomen two months after sigmoid colectomy for subacute volvulus showing gross dilatation of the whole colon down to the anorectal ring.

should suspect the patient has megacolon-volvulus if bowel symptoms recur with or without acute episodes of volvulus; in such cases, the remaining colon will be dilated on x-ray, probably with a new "sigmoid colon." If megacolon is diagnosed for patients with volvulus, the definitive procedure required is total colectomy, not sigmoid colectomy.

Conclusions

In the commonest type of sigmoid volvulus ("simple volvulus") the remainder of the colon is normal, flatus tube decompression is usually successful, and sigmoid resection provides a cure. A less common kind of volvulus occurs in patients with idiopathic megacolon, is incompletely relieved by flatus tube, and is not cured by sigmoidectomy.

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