

ACUTE OBSTRUCTION OF AFFERENT OR EFFERENT LOOP, FOLLOWING ANTECOLIC PARTIAL GASTRECTOMY, WITH REPORT OF THREE CASES*

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PARTIAL GASTRECTOMY has become a safe operation with a low mortality. As the mortality rate of an operation decreases, the occurrence of an uncommon but potentially lethal complication assumes an increasing importance. The purpose of this paper is to discuss the obstruction of the afferent or efferent loop following antecolic partial gastrectomy. This form of postoperative complication appears to be uncommon (although this may be due to cases being unrecognized and unrecorded). Had all the three cases which will be described proved fatal, the mortality of the whole series would have been doubled.

The three cases which will be described occurred in a consecutive series of 120 antecolic partial gastrectomies for gastric, duodenal and anastomotic ulcers (including three emergency operations), all under the care of one surgeon. There were two immediate postoperative deaths (one pulmonary embolus and one reactionary hemorrhage) and another death two months after operation from a gastro-intestinal hemorrhage, the cause of which was not properly explained in life or at autopsy. A fourth postoperative death, from afferent loop obstruction, will be described below.

The operation performed was a two-thirds to three-fourths resection of the stomach, with an antecolic gastro-enterostomy, afferent loop to lesser curve, with a full width stoma.

CASE REPORTS

Afferent Loop Obstruction.

Case 1. Mr. A. H., age 47, was admitted in December, 1949, with a chronic duodenal ulcer and pyloric stenosis. At laparotomy on January 20, 1950, the stomach was found to be large and hypertrophied and the duodenum was scarred and narrow. An antecolic partial gastrectomy was performed. Recovery was uneventful and he was discharged to convalescence after 16 days.

Four months later, on May 11, 1950, he was re-admitted as an emergency with a 36-hour history of severe abdominal pain of sudden onset. The pain was continuous and radiated to his right shoulder. He vomited twice. On examination, he looked very ill; temperature was normal and pulse 130. His tongue was dry and furred. The abdomen was tender and rigid all over. The stomach was aspirated and the gastric contents contained no bile. At operation the afferent loop was found to have passed under the efferent loop and become strangulated by the mesentery of the loop. The duodenum was very distended and the surrounding tissues edematous. The afferent loop was reduced and an entero-anastomosis between the two loops performed, to prevent recurrence. The wound was closed with drainage. Immediate recovery was good, but on the fourth postoperative day he developed a duodenal leak. The quantity of duodenal contents discharged from the drain gradually increased daily, and on the 10th day, 30 ounces were collected. The general condition was maintained with replacement therapy, and the discharge became less, but on the 20th day the general condition suddenly deteriorated and he became jaundiced and died 22 days after operation. No postmortem examination was permitted.

Case 2. Mr. T. B., age 48, was admitted in June, 1951, with a chronic duodenal ulcer and pyloric stenosis. At operation on July 16, 1951,

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the stomach was found to be large and hypertrophied, and there was scarring of the duodenum. An antecolic partial gastrectomy was performed. Recovery was uneventful and he was discharged to convalescence after 16 days.

On September 9, 1951, he was re-admitted with a 12-hour history of severe upper abdominal pain, of sudden onset. He vomited twice. On examination he looked ill and shocked; temperature was subnormal and pulse 150. There was generalized abdominal tenderness and rigidity. He vomited again after admission; there was no bile in the vomit. At operation the findings were ex-

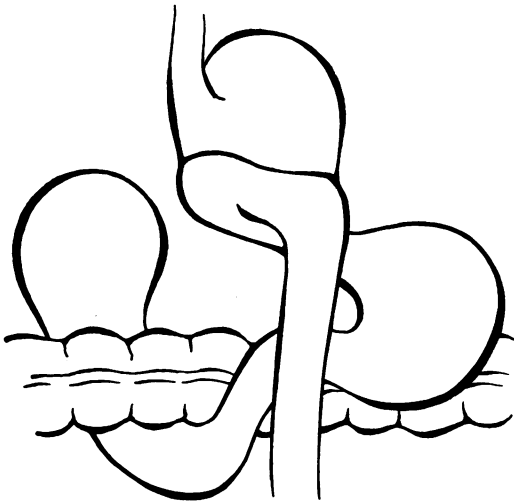


FIG. 1. Diagram showing acute afferent loop obstruction.

actly as in the previous case. The duodenum was distended and the afferent loop strangulated by the mesentery of the efferent loop. The strangulated efferent loop was so distended that it had to be aspirated before reduction was possible. An entero-anastomosis was performed between the two loops and a Ryle's tube passed through the stoma into the afferent loop. He remained very ill for 48 hours after operation, but then made a good recovery and has remained well for the last 2 years.

Efferent loop obstruction.

Case 3. Mr. H. K., age 37, was admitted in June, 1952, with a chronic duodenal ulcer. At operation on July 4, 1952, he was found to have a very large posterior penetrating duodenal ulcer. An antecolic partial gastrectomy was performed.

On the fourth postoperative day he complained of upper abdominal pain. There were no abnormal signs in the abdomen. A Ryle's tube was passed and 4 ounces of fluid contents removed from the stomach. Regular aspirations were carried out and all contained bile. He continued to have intermittent pain and the quantity of the gastric aspiration increased. On the 6th day the quantity of the aspirations was such that it was clear that nothing was passing into the efferent loop, and on examination of the abdomen there was a fullness above the umbilicus. A diagnosis of efferent loop obstruction was made. At operation on July 11, 1952, the efferent loop was found to have passed beneath the afferent loop and carried most the small intestine with it. This was reduced.

To prevent recurrence, the mesentery of the loop was sutured to the transverse colon and mesocolon with interrupted sutures. The closure of the "foramen" (*i.e.* the space between the anastomosis in front and the transverse colon, mesocolon and posterior abdominal wall behind) could not be complete and care had to be taken not to kink the duodeno-jejunal flexure. The patient made a good recovery from the operation, although discharge from hospital was delayed by a postoperative pulmonary collapse. He has remained well for the last year.

DISCUSSION

Afferent Loop Obstruction. The main features of this condition are sudden, severe, abdominal pain, vomiting gastric contents which contain no bile, tachycardia and abdominal tenderness and rigidity in a patient who has had a previous antecolic partial gastrectomy. These two cases were so similar that in the second a tentative diagnosis was made on hearing the history from the patient's doctor.

At operation, the appearances of this complication may be rather confusing. When one loop has passed beneath the other, the result may resemble a rotation or a volvulus of the anastomosis. Sometimes reduction may be effected before the true state of affairs becomes clear. Two cases³ occurring at a neighbouring hospital illustrate the difficulty of exact diagnosis:

Case 4. Mrs. C. M., age 56, had an antecolic partial gastrectomy performed in June, 1951, for

a chronic gastric ulcer. Three months later she was re-admitted with a history of severe abdominal pain and vomiting for 2 hours. On examination the abdomen was rigid and tender. At operation the duodenum was found to be very distended, but while the parts were being examined, the duodenum collapsed and no satisfactory cause of the obstruction was found. The patient made a good recovery and has remained well.

Case 5. Mr. H. B., age 28, had an antecolic partial gastrectomy performed in September, 1950, for recurrent perforated duodenal ulcer. He was re-admitted 4 months later with a history of abdominal pain and vomiting of a few hours' duration. On examination the abdomen was tender and rigid, and the pulse 120. At operation, there was distension of the duodenum with obstruction of the afferent loop and what appeared to be a 180° volvulus of the stomach in a longitudinal axis. The afferent loop was reduced and fixed to prevent recurrence. The patient made a good recovery.

Monro² describes a similar complication after an antecolic partial gastrectomy, with sudden severe abdominal pain and tachycardia, coming on 20 hours after operation. The patient died after a few hours and postmortem examination showed a closed loop obstruction of the afferent loop, which had passed under the efferent loop and was obstructed by the mesentery of the jejunum forming the anastomosis.

Mimpriss and Birt¹ also record a similar complication. In a series of 130 antecolic partial gastrectomies, there were three cases of afferent loop obstruction. One patient died on the 14th day after operation, and two recovered after a further operation. The symptoms were severe abdominal pain and bile-free vomiting. At operation, both were found to have a "grossly dilated proximal loop rotated behind the gastric remnant"; recurrence was prevented in one case by an enteroanastomosis and the other by fixing the afferent loop to the right of the stomach.

Wells and MacPhee⁷ record a similar but subacute obstruction, when there was "repeated post-prandial bilious regurgitation" following an antecolic partial gastrectomy, due to rotation of the afferent loop. At a

second operation, two months after the original operation, the twist in the jejunum was undone and a jejunoplasty performed.

As an afferent loop obstruction is a "closed" obstruction, in its later stages it could progress to rupture of the duodenum or afferent loop. In the first case described here, the duodenal wall was probably damaged by distension and gave way a few

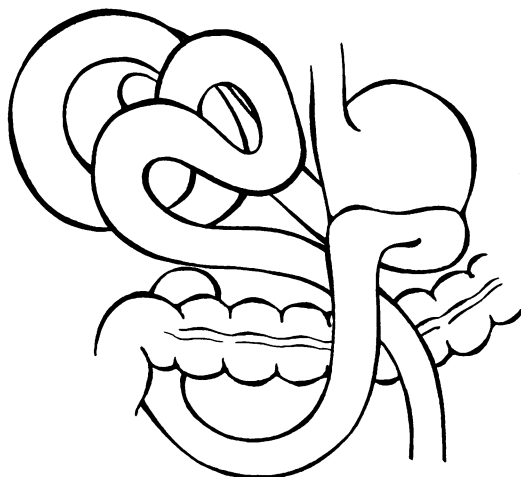


FIG. 2. Diagram showing acute efferent loop obstruction.

days later. Smith⁴ describes a case of "spontaneous rupture of the proximal jejunal loop" nine months after partial gastrectomy. The rupture occurred just distal to the duodenal-jejunal flexure and probably followed an obstruction of the afferent loop, similar to those described above.

Afferent loop obstruction could also be a factor in causing a duodenal leak soon after operation. Should such a leak occur, aspiration of the stomach will show whether bile is passing into the stomach. If the aspirations are bile-free, it is probable that the afferent loop is obstructed.

Efferent Loop Obstruction. This complication is really one of high intestinal obstruction. Stammers⁵ (1951) mentions the condition as a potential cause of postoperative intestinal obstruction, and later⁶ (1952), in a series of 600 partial gastrec-

tomies (the type of operation is not recorded), describes one case of small intestinal obstruction coming on five days after an antecolic partial gastrectomy, when a loop of small intestine had passed under the afferent loop. The patient recovered after operation when the small intestine was reduced and the "foramen" behind the anastomosis closed by suturing the efferent loop to the appendices epiploicae of the transverse colon.

He also gives details of a second case very similar to Case 3, in which there was obstruction of the efferent loop five days after the partial gastrectomy. The patient recovered after a further operation, at which the efferent loop was reduced and an entero-anastomosis performed between the efferent and afferent loops.

ETIOLOGY AND TREATMENT

In afferent loop obstruction, a too-long loop could be considered as a possible cause, as a longer loop will be more likely to herniate beneath the efferent loop. A very short loop could also be a causative factor, as the mesentery could form a tight band, beneath which the afferent loop might rotate. In the case of the efferent loop obstruction, the length of the loop can make very little difference. The important factor in either form of obstruction is the "foramen" behind the anastomosis. Any postoperative "foramen" is a potential source of internal herniation and obstruction and it is perhaps surprising that obstruction has been so rarely reported following antecolic partial gastrectomy.

Closure of the "foramen" is the rational method of preventing obstruction. It is probably often effected unintentionally by adhesions. Formal closure was attempted in the third case described above, and is advocated by Stammers (1952). Unfortunately closure can never be complete, as the loop cannot be sutured to both sides of

the transverse mesocolon. However, a few interrupted sutures can cut down the size of the gap, and lessen the potential danger of obstruction.

In established cases it is important that the complication should be recognised early and operation performed without delay. In afferent loop obstruction, anastomosis between afferent and efferent loop obstruction prevents recurrence and ensures emptying of the afferent loop. An alternative procedure is to perform a jejunoplasty as in the case of Wells and MacPhee. With the latter operation there is less risk of stomal ulceration.

SUMMARY

In a series of 120 antecolic partial gastrectomies there were two cases of acute afferent loop obstruction and one case of acute efferent loop obstruction.

The three case histories are described.

Similar cases occurring in the literature are cited. The diagnosis, etiology and treatment of these complications are discussed.

ACKNOWLEDGMENT

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