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AN INFREQUENT SURGICAL ERROR: GASTROILEOSTOMY

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GASTROILEOSTOMY is an iatrogenic error producing a malabsorption syndrome, the symptoms of which are almost pathognomonic of this condition.

The sequence of events has been described in 1912, when Judd, reported by Mercur,¹ corrected this condition for the first time at the Mayo Clinic. Since then, many more cases have been described in the medical literature; most of them present the typical history of a gastroenterostomy or a gastrectomy, performed somewhere else, for peptic ulcer disease. If a gastroenterostomy was planned and the error committed, symptoms occur at variable times following surgery because of the possibility of the ingested food going normally through the pylorus and ignoring for some time the new passage created surgically.

When the mistake happens as a sequence of a gastrectomy, the symptoms appear as soon as the patient is allowed to eat solid food, and they consist of numerous bouts of diarrhea. As time passes the diarrhea persists, and the patient loses much weight rapidly. This rather simple sequence of gastrectomy, early and persistent diarrhea, and weight loss, should cause one to suspect the presence of a gastroileostomy, and additional tests should be undertaken to establish the diagnosis or rule it out.

It has been pointed out in several articles that there is no instance where the same surgeon or the same hospital has ever reported the initial procedure and its correction. This, of course, means that there may be many more unreported cases and that this error might not be as rare as thought.

Our case is, we believe, a good illustration of a malabsorption syndrome produced by an ill-placed anastomosis.

CASE REPORT

J. A., 65 yera old white male, had a duodenal ulcer producing recurrent episodes of pain for 30 years. In November, 1960, he had a severe hemorrhage, and a gastrectomy was performed to stop the bleeding. At the time of surgery, the patient's weight was 157 lb. One week after the operation, as soon as he was eating a solid diet, the patient developed diarrhea producing about 15 stools a day. After 20 months, the patient was referred

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to us for evaluation. During these months he had been free of pain and had a great appetite. When seen, he weighed 102 pounds, the diarrhea was still present, and this man could not walk without some support. The steathorrhic stool contained 80 per cent of ingested fat. The calcium of 8.4 and the phosphorus of 2.4 reflected the marked osteomalacia secondary to the malabsorption syndrome. The fasting blood sugar was 100 mgm. per cent, the hemoglobin 10 mgm. per cent, and the hemotocrit 37. The bromesulphalein test was negative. The total proteins were 5.4 grams per 100 cc., the albumin fraction being 2.52 grams. The serum carotene was 15.6 mgm. per cent. The microscopic examinations of the stool revealed a large amount of undigested food with numerous undigested meat fibers.

A barium meal showed a very rapid transit with filling of the cecum after 15 minutes, the small bowel appeared shortened but the length of the afferent loop could not be demonstrated adequately. At operation, a Polya type gastrectomy was found, with the anastomosis being located at 90 cm. from the ileocecal valve. The anastomosis was taken down, this portion of ileum was resected and reanastomosed, the stomach was anastomosed to the first jejunal loop following the ligament of Treitz.

Six weeks after surgery the patient had gained 25 pounds and had normal bowel movements. After one year the weight stabilized at 143 pounds. The stool contained a nearly normal percentage of ingested fat.

It seems interesting to us to try to explain how such an error could have been made. Earlier reports have pointed out the presence of congenital anatomical anomalies which could mislead the surgeon. In our case the right colon was very mobile. The cecum lay close to the midline with the appendix located by the ligament of Treitz. It is conceivable that, because of this situation, the surgeon at the time of the first operation could have run the bowel towards the ileum, confusing the first jejunal loop with one of the last ileal loops, because the appendix was in this area.

Because of the presence of anomalies, adhesions, scar tissue, inflammatory processes, the ligament of Treitz should be recognized before anything else should be done. Some surgeons go as far as tagging the first jejunal loop with a long black silk. We cannot but approve this procedure if such a simple maneuver helps avoid the long morbidity that follows a wrongly placed anastomosis.

CLINICAL FINDINGS

Weight Loss: In most of the published cases this seems to be the cardinal symptom. In spite of the fact that the patient maintains a good appetite, the loss is constant until the patient becomes cachetic.

Diarrhea: As soon as the patient is able to take solid food, the diarrhea appears with characteristics seen in sprue and pancreatitis. Gastrojejuno-colic fistulas or conditions where the gastrocolic transit is accelerated such as regional enteritis or chronic ulcerative colitis can present similar symptoms. The history and examination of the stool and x-rays will help in the differentiation. Of all these conditions, gastrojejuno colic fistulas might be the most difficult to differentiate, but this latter complication appears as usual later after initial surgery.

The stool contains a high percentage of undigested food and also a large quantity of unabsorbed fat. This is much more pronounced than in the mild steatorrhea seen after any gastrectomy.

GASTROILEOSTOMY

Pain: This will be pronounced if there is production of a marginal ulcer, but this is a late manifestation. Our patient, as well as many others, had no pain.

X-rays: They can confirm the diagnosis because of the rapid transit and by simply demonstrating the shortness of the distal segment. In our case, x-rays were helpful but not absolutely conclusive. Brush,² in 1947, already observed the refill of the stomach with barium after several hours if the previous operation was simply a gastroenterostomy.

PLANNED REDUCTION OF THE LENGTH OF THE BOWEL

It is obvious that gastroileostomy as a result of an error during the performance of a gastrectomy is a harmful operation. The morbidity that follows is extraordinary. However, recently some authors have wondered if a planned operation of this kind could not be of some use in certain well-selected cases of obesity. Physicians and dietitians have been working for years trying to control weight by diet or medication. There is no doubt that a reduction in the caloric intake and a low-fat diet will reduce the body weight. But one has to depend on the individual who more than probably will not follow a diet. Experimentally and clinically, a low-fat diet reduces the serum cholesterol concentration and serum lipids concentrations. If this result

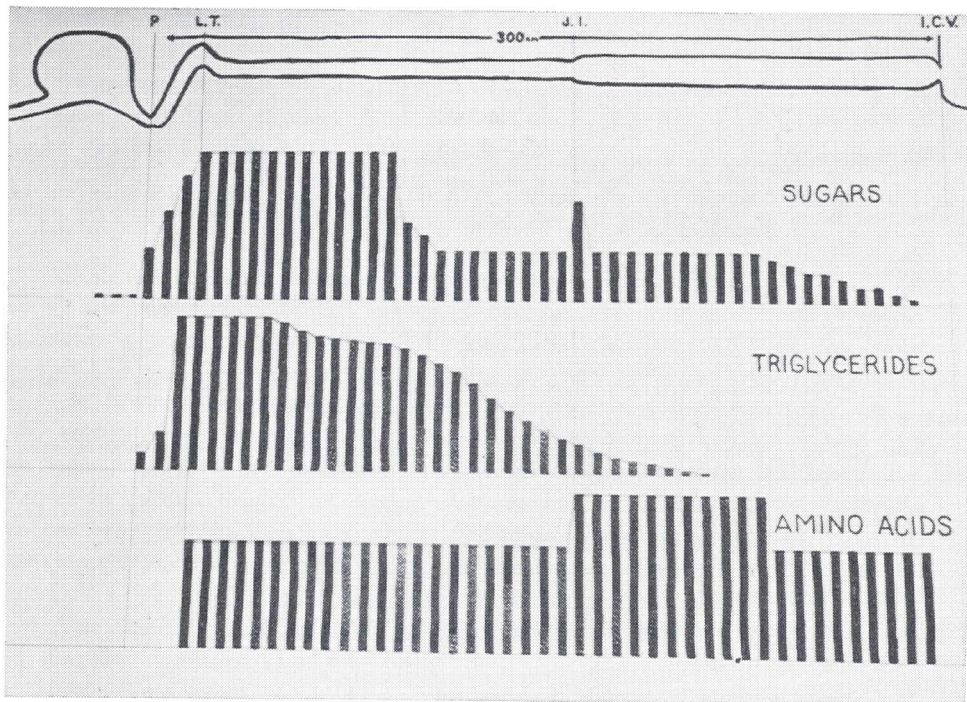


Figure 1

Selective absorption of the three essential elements along the gastrointestinal tract.
P: Pylorus Lt: Lig. of Treitz JI: Jeuno ileal junction ICV: Ileocecal valve

cannot be obtained by diet, one can conceive of a reduction in the absorptive surface of the small bowel which will result in a decrease in fat absorption. If one considers the possibility of reducing the absorptive area of the intestine by a short circuiting operation or by a resection, one has to know which area to eliminate or where the fats are absorbed. The precise areas of absorption of the three main nutritional constituents — carbohydrates, lipids, and proteins — have been a matter of heavy controversy. Recent studies made in several parts of the country show that there is now agreement about these sites. The general method used to determine these locations consist in feeding a measured quantity of substance in a meal containing a non-absorbable marker. Then the intestinal content is sampled at different levels of the small bowel (Figure 1).

When we observe these curves it appears that the proximal jejunum is mostly responsible for the absorption of fats and carbohydrates. It starts to make sense that shortening these particular areas might produce a reduction in the serum cholesterol and lipid concentration.

A few short circuiting operations have been performed in Los Angeles and Cleveland. The reported patients were left with about 50 cm of jejunum and their weight leveled around 140 or 150 pounds, the initial weight being around 230-240 pounds. It is thought that these operations might have a place in the treatment of severely obese people with pulmonary or cardiac complications.

SUMMARY

Gastroileostomy is an easily preventable surgical error. A typical case is presented and the clinical findings are discussed. Planned short circuiting operations might be useful in the treatment of severe obesity.

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