Giant marginal ulcer

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Abstract. Marginal ulcer is a well-known complication of gastroenterostomy. It occurs in 3% of patients post–Billroth II subtotal gastrectomy; it occurs in less than 1% if truncal vagotomy is included but in up to 30% of patients with gastroenterostomy without vagotomy [10, 11, 14, 16]. These ulcers occur at the anastomosis, but always on the jejunal side, and are known to develop complications of their own — e.g., intractable pain, hemorrhage, obstruction, perforation, and fistula formation [6, 8, 17]. Prior to the advent of upper-GI endoscopy the main method of diagnosis was by history and upper GI series but the accuracy of the upper-GI series was about 50% or less. Now that upper-GI endoscopy is available, the accuracy of diagnosis is 95% or better. Since truncal vagotomy has been widely adopted as an integral part of gastric surgery — e.g., antrectomy, hemigastrectomy, subtotal gastrectomy, and gastroenterostomy — the incidence of marginal ulcer has declined. The use of cimetidine, ranitidine, famotidine, omeprazole, sucralfate, and antacids has improved the medical management of duodenal ulcer to such a degree that in recent years there is much less need for surgical intervention and thus the incidence of marginal ulcer has declined even more. In addition, the H-2 blockers and omeprazole can be used in patients with marginal ulcer and achieve healing; therefore complications that so frequently required surgical intervention are much less frequent [3, 12]. This report describes the clinical course of a patient with a virulent form of marginal ulcer and recurrent gastric bezoars, who was 5 years post truncal vagotomy and hemigastrectomy, with no evidence of a Zollinger-Ellison syndrome and low gastric acid as determined by two studies.

Key words: Marginal ulcer – Gastroenterostomy – Upper-GI endoscopy

Clinical summary

K4P9T is a 45-year-old woman 4 years post cholecystectomy who had a bilateral truncal vagotomy and Billroth II hemigastrectomy for intractable duodenal ulcer in 1982. Three years postoperatively she developed enterogastric reflux gastritis, for which a Roux-en-Y 25-cm gastrojejunostomy was performed. Six months later she had a severe episode of nausea, vomiting, and distention for which a laparotomy with lysis of adhesions was performed, but in the operative note there was no mention of a significant point of small-bowel obstruction or a marginal ulcer. In addition, there had been no radiographic evidence of small-bowel obstruction.

Because her epigastric pain had become constant, and because she was vomiting six times per day and had a microcytic anemia (HB 11 g%) and a progressive weight loss of 25 pounds, further studies were undertaken in July 1987. An upper-GI series described a normal esophagus, and gastric pouch, but there was significant delay in gastric emptying. However, on review of these films, following the upper GI endoscopy performed on the following day, the upper jejunum was found to be completely devoid of mucosa for 8 cm, and this segment was stenotic and without evidence of peristalsis. A large gastric bezoar, not identified on the upper-GI series, was also found on the upper-GI endoscopy. The bezoar was estimated to be 4 × 10 cm and was broken up with the scope and removed by biopsy forceps and lavage. There was no evidence of gastric ulcer, gastritis, or a bile pool, and the anastomosis was noted to be widely patent. The most significant
endoscopic finding was a large circumferential jejunal ulcer that extended 8 cm below the gastrojejunostomy (Fig. 1). This segment was completely devoid of mucosa and the distal end was significantly narrowed. At the lower end of the ulcer there was an abrupt change to normal jejunal mucosa.

To evaluate the adequacy of the previous vagotomy and hemigastrectomy the following information was obtained: The 1982 pathology report confirmed two vagal trunks; the gastric antrum measured 12 cm and the distal margin contained duodenal mucosa. Gastric analysis showed BAO 0.2 mEq/L, MAO 0.21 mEq/L, PAO 0.24 mEq/L; Calcium was 7.9 mg% and serum gastrin 34 pg/ml. In view of her persistent vomiting and progressive weight loss due to the stenosing jejunal ulcer whose etiology was unclear, it was elected to resect the upper jejunum, to bring up the normal jejunum for the anastomosis, and also to convert the Roux-en-Y 25-cm to a 60-cm level.

At operation the upper jejunum was found to be narrowed and quite firm for 8 cm. This segment along with 2 cm of gastric pouch and 4 cm of normal jejunum was included in the resection and an end-to-end gastrojejunostomy was performed. In addition the Roux-en-Y 25-cm anastomosis was converted to a Roux-en-Y 60-cm anastomosis.

Pathology exam revealed a 'circumferential marginal ulcer with a bed of granulation tissue and fibrinous exudate. The chronicity of this large superficial ulcer [Fig. 1] is attested to by fibrosis of the submucosa and hypertrophy of the muscularis propria and nerves. The stomach showed chronic gastritis with intestinal metaplasia.' There was no evidence of an ischemic process and no evidence of granuloma or neoplasia.

Her postoperative course was uneventful and she was discharged on a six-meal bland diet on the eighth postoperative day. Although much improved she still vomited once or twice a day. An upper-GI series 4 months postoperatively was read as normal. Two days later, however, upper-GI endoscopy demonstrated a well-formed bezoar estimated to be $3 \times 8$ cm. It was removed, and the gastric wall, anastomosis, and upper jejunum were endoscopically normal. Pancrease was given four times per day and she ate only cooked foods in six equal meals. At 5 months she had epigastric pain, bloating, vomiting, and heartburn, and an upper-GI endoscopy at this time revealed esophagitis, another smaller bezoar, and a small recurrent marginal ulcer. Biopsies showed a jejunal ulcer. Famotidine was added to her regimen and clinically she was improved.

Over the next 6 months, however, she had vomiting once or twice a day, and upper-GI endoscopy revealed recurrent gastric bezoars; at 1 year a large recurrent marginal ulcer was identified. The gastric analysis again showed low acids, BAO 0.5, MAO 1.9, and PAO 2.4 mEq/L. A secretin test was normal but a Congo Red test [2] was strongly positive. In this test the patient is premedicated with pentagastrin 6 mg/kg, and with the gastroscope placed within the stomach, 150–200 cc of the Congo Red-NaHCO3 mixture is lavaged to cover the entire gastric surface. Black spots are noted at 1, 3, 5, and 10 min and indicate the location and degree of active acid secretion. In this patient at 10 min the fundus was almost completely black, indicating a strong acid output and therefore an incomplete vagotomy.

Despite the low acids on gastric analysis but in the face of a recurrent marginal ulcer and a positive Congo Red Test [2], transthoracic vagotomy was performed plus a resection of the upper jejunum with reanastomosis in November 1988. Postoperatively she was well for 2 days but on the morning of the third day she was in severe respiratory distress and required respirator support for several days for adult respiratory distress syndrome, probably secondary to aspiration. Four months postoperatively an upper-GI endoscopy was repeated and showed normal gastric and jejunal mucosa and no evidence of a bezoar. The Congo Red test showed only a minimal acid response at 2 and 5 min.

Discussion

Most authors interpret a marginal ulcer as evidence of inadequate acid reduction. Although incomplete vagotomy is the most common cause, there are nine tests available that investigate the other causes. Kudsk, Vaccaro, and Carey estimate that a truncal vagotomy will reduce the acid production by 45% and an antrectomy well decrease it by another 15%. Although the acid reduction is 60%, the remaining fundus will still secrete some acid as opposed to the situation in the case of extreme hypochlorhydria associated with pernicious anemia, atrophic gastritis, and enterogastric reflux gastritis. Grace et al. [4], have reported a low incidence of marginal ulcer after the pylorus-preserving pancreatic