

Gastrocutaneous Fistula—as a Postoperative Complication

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MUCH has been written about the break down of suture lines following intestinal anastomoses. Gastrocutaneous fistulae following gastrojejunostomy with marginal ulceration has been previously reported from the Vanderbilt University Hospital.⁵ Less common are gastrocutaneous fistulae from the stomach occurring without operative procedures on the stomach itself, or from areas of the stomach separate from anastomotic suture lines of operative procedures. This is a report of three instances of such gastrocutaneous fistulae and some observations on diagnosis, pathogenesis and management.

Case Reports

Case 1. A 65-year-old woman was admitted with advanced arteriosclerotic heart disease and idiopathic thrombocytopenic purpura. She had been under treatment for some months with corticosteroids without control of the bleeding tendency and splenectomy was decided upon.

At operation all vasa brevia were ligated prior to delivering the spleen because of obesity of the patient and friability of the veins. The splenic artery and splenic veins were ligated separately. The spleen was delivered without difficulty and three rubber tissue drains were placed into the splenic bed and brought out through the lateral pole of the left subcostal incision. Replacement therapy with corticosteroids was continued. Seventy-two hours after operation a dark serosanguinous drainage from the wound was associated with fever. On the sixth postoperative day drainage increased but fever was low grade and the patient was ambulatory and eating. There was a

left subdiaphragmatic fluid level on x-ray, and when radiopaque media was given by mouth extravasation through a 2 cm. defect in the apex of the cardia of the stomach was seen (Fig. 1). Gastric suction was instituted. Three days later after a fever rise a large rubber tube was placed into the subphrenic space without the gastric defect being identified. Sump drainage was instituted by a smaller catheter inserted through the large tube (Fig. 2). Liquid diet was given after one week of combined suction, or 2 weeks postoperatively. No change occurred during the next 3 weeks. Five weeks postoperatively prednisone was stopped and combined suction was applied again for 10 days with no beneficial results (Fig. 3). Regular diet was then given and there was little drainage thereafter from the gastrocutaneous fistula (Fig. 4).

Case 2. A 52-year-old man had been hospitalized on several occasions with a diagnosis of Feltz's syndrome. He had generalized arteriosclerosis and had been receiving corticosteroid therapy for several years. He had an enlarged, painful spleen, and severe perisplenitis. It was decided to perform splenectomy.

At laparotomy the spleen was adherent to the diaphragm and greater curvature of the stomach. All vasa brevia were ligated and divided, and the splenic artery and vein were ligated and divided at the upper margin of the pancreas. The spleen was removed without incident. Four drains were placed into the left subphrenic space and brought out through a stab wound in the left flank. On the third postoperative day the patient had severe pain in the left upper quadrant and left shoulder without associated fever. Twenty-four hours later there was gross dark drainage from the drain site wound. On the fifth postoperative day the drains were shortened and there was profuse chocolate colored drainage from the left upper quadrant. Radiopaque media by mouth on the ninth postoperative day disclosed a 2 cm. gastric fistula at the cardiac portion of the stomach on its posterior wall. Sump drainage was instituted by way of the drain site (Fig. 5). A single episode of gastrointestinal bleeding manifested by

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FIG. 1. Case 1. X-ray of gastrograffin meal demonstrating fistulous tract from apex of cardia of stomach to rubber tissue drains in left subphrenic space.

melenas occurred on the 30th postoperative day. No cause for this was identified. Irrigation of the wound was started on the 32nd postoperative day. On the 46th postoperative day drainage stopped and there was no significant drainage after this time (Fig. 6).

Case 3. A 46-year-old woman was admitted to the surgical service April 16, 1969, in whom a perforated peptic ulcer had been surgically closed at another hospital 3 years previously. She had been asymptomatic until 3 months prior to admission when epigastric pain, nausea and vomiting returned. A gastrointestinal x-ray series was interpreted as normal. Conservative measures did not relieve the symptoms. At operation a massive 7 cm. posterior gastric ulcer adjoining the lesser curvature with extensive scarring of the entire gastric area was found. Truncal vagotomy and subtotal gastric resection with a Billroth I gastroduodenostomy was carried out. Due to an incidental tear the spleen was removed with division of the vasa brevia. An unknown portion of the left gastric vessels had been divided during the resection. Drains were placed over the denuded pancreatic bed of the ulcer.

The patient was taking a soft diet by the seventh postoperative day. On the ninth day there was profuse drainage from the drain site as the drains were twisted. A barium meal x-ray showed a gastrocutaneous fistula arising just above the gastroduodenostomy with multiple tracts (Fig. 7).

Sump suction via catheter inserted through the drainage site and gastric suction via Levine Tube were instituted and continued for 10 days. At this time fever and toxicity had subsided. Soft diet was again given and drainage decreased during the next few days and ceased 28 days postoperative and 7 days postsuction. She had no further trouble.

Pathogenesis

The pathogenesis of these gastric fistulae seems to be on the basis of vascular necrosis. This was first reported in 1953 by Rutter,¹¹ and in 1956 by Spencer¹² when they reported ischemic necrosis of the gastric remnant following extensive subtotal gastrectomy. Additional reports followed.^{4, 7, 8} In these reports it was pointed out that there was a generous intramural anastomosis in the wall of the stomach which protected the stomach against the ordinary insults of gastric surgery. Studies of blood supply^{3, 6, 9, 13} of the stomach indicated that either the left gastric or gastroepiploic artery alone is adequate to support the circulation to a gastric stump (Fig. 8). Devascularization to produce necrosis of the gastric remnant ordinarily requires division of both gastric arteries, both gastroepiploic arteries and the vasa brevia. Even after

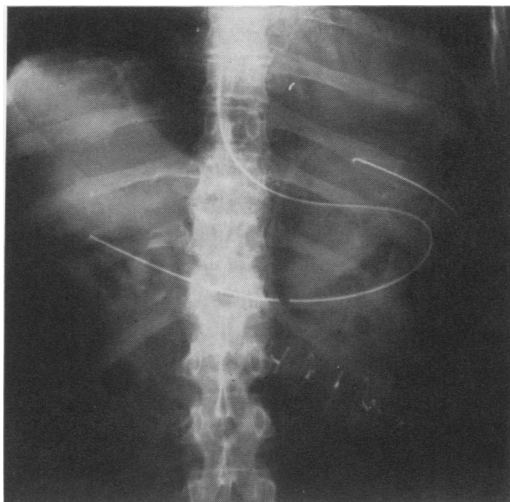


FIG. 2. Case 1. X-ray of abdomen showing radiopaque nasogastric tube in stomach and catheter in left subphrenic space for the application of suction.

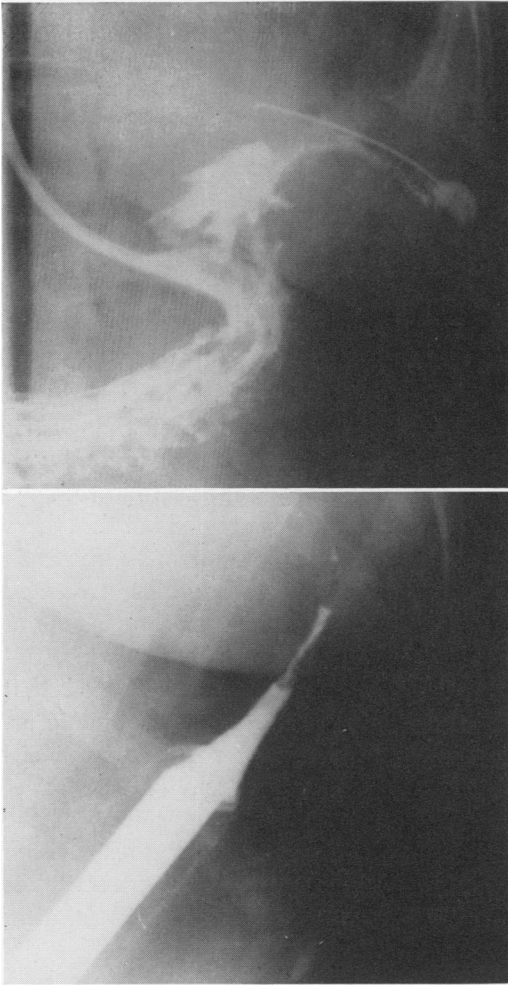


FIG. 3 (top). Case 1. X-ray of gastrograffin meal showing persistence of fistulous tract 6½ weeks postoperative.

FIG. 4 (bottom). Case 1. X-ray of sinus from left subtotal drainage tube. Fistula has closed.

all vessels are divided, the left inferior phrenic and esophageal arteries frequently provide adequate blood supply to maintain viability of the remnant. Kilgore⁹ postulates from studies on dogs that leakage from gastroenteric anastomoses is probably due to compromised blood supply of the gastric remnant insufficient to produce overt gangrene but sufficient to prevent complete healing of a suture line. The basis of this collateral circulation is in the intramural anastomosis which could be affected by previous operation, by inflammatory re-

action or by degenerative disease in arterioles.

It is established that individuals who are taking prolonged corticosteroid therapy develop arteriosclerosis. Patients with Cushing's disease may be expected to come to a fatal terminus as a result of progressing arteriosclerosis. This is also true of Cushingoid state brought on by corticosteroid therapy. The adverse effects of steroids on the healing has been established, and in some instance there is an associated arteriolitis in addition to arteriosclerosis.

The combination of these factors in the first two cases apparently led to devascularization of a portion of the posterior wall of the cardia in one and to the apex of the cardia in the other. The left gastric artery and the vasa brevia were probably divided in the third case. Kilgore⁹ emphasized the frequently healthy appearance of a devascularized gastric remnant at the time of anastomosis which breaks down later.

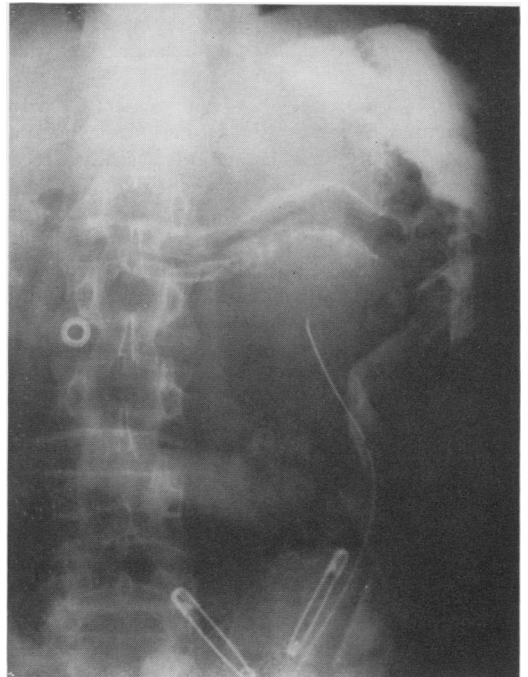


FIG. 5. Case 2. X-ray of gastrograffin meal demonstrating extravasation of media from the stomach to the left subphrenic space.

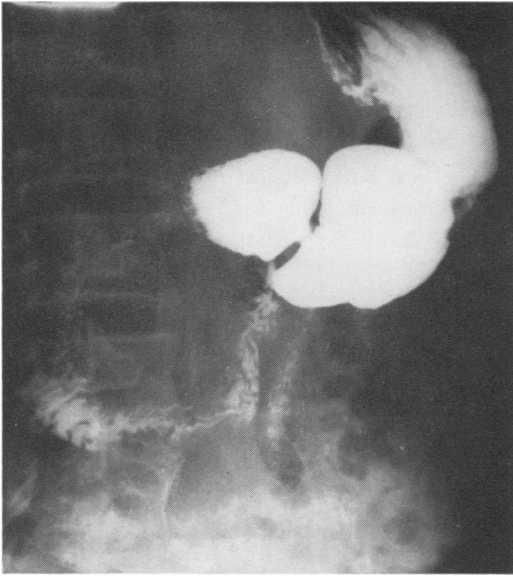


FIG. 6. Case 2. X-ray of abdomen showing extravasated media in left subphrenic space and catheter for sump suction.

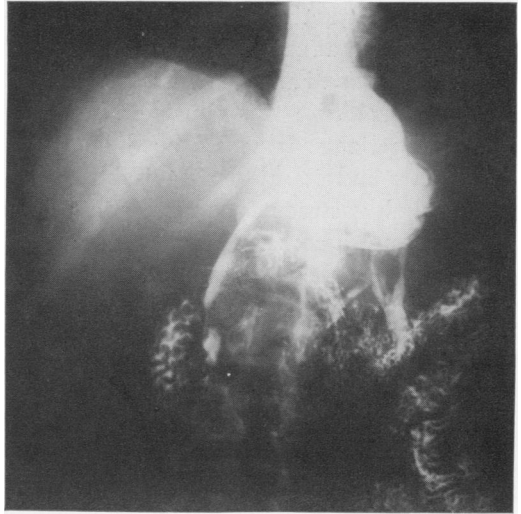


FIG. 7. Case 3. X-ray of gastrograffin meal demonstrating leakage of media from gastric remnant by multiple tracts.

Circulation to the stomach through the vasa brevia and the left gastroepiploic artery is usually underestimated. Should the left gastric artery be the site of arteriosclerosis, the splenic portion of the circulation to the proximal area of the stomach then becomes important. Casual removal of the spleen may result in devascularizing a portion of the proximal end of the stomach.

Diagnosis

If drainage of the area of devascularization is adequate, there will be early drainage. As Spencer¹² reported, the wall of the stomach becomes tissue paper thin and permeable to gastric contents within 72 hours. If drains are not contiguous to the area of necrosis, drainage will be late and, will be apparent only when the drains are disturbed preparatory to removal. The diagnosis is confirmed by administration of water soluble radiopaque media by mouth since it will escape through the fistula shortly. The use of radiopaque media is preferable to the administration of dye by mouth as the appearance of the dye in

drainage only confirms the existence of the fistula. Until the fistulous orifice is actually demonstrated on radiopaque x-ray examination, it is impossible to determine the level and path of the fistula.

Management

There should be adequate drainage of the splenic bed at the time of operation when there is a possibility of devascularization of the stomach. As soon as the diagnosis is made suction type drainage should be instituted. Suction protects the skin and reduces the size of the cavity before the

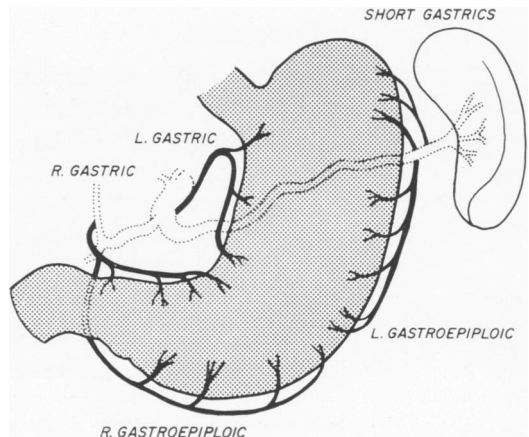


FIG. 8. Arterial blood supply of the stomach.

walls of the tract become too rigid to collapse. In our patients the fistulous openings were 2 cm. in diameter or greater.

Surgical closure was considered in each of these patients. It would be difficult and hazardous and is seldom advisable.

Although gastrocutaneous fistulae are not likely to produce sepsis, control of casual infection can be important. Drainage is essential for correction of the fistula and prevention of secondary infection. Antibiotic agents should be employed as indicated by culture and sensitivity tests. Special attention must be given to fluid, electrolyte and nutritional support. Further, corticosteroid therapy must be continued.

Gastric suction has some advantages in collapsing the cavity between the stomach and the skin. This effectiveness disappears after a few days and nothing is gained by prolonged gastric suction in most instances. Regular diet as soon as possible seemed beneficial to our patients.

These patients are ideal candidates for stress ulceration. One patient bled severely and the cause of bleeding was never determined. Protection with antacids and vagal antagonists is essential in long-term management.

Some years ago Dr. James A. Kirtley stated that "everything begins healing about the fifth week." These defects apparently close between the fifth and seventh week.

Summary

The clinical courses of gastrocutaneous fistulae originating from an apparently devascularized area of intact gastric wall have

been presented. In all the vasa brevia were divided during removal of the spleen. The possible additional ischemic effects of operative trauma or arteriosclerosis and corticosteroid arteriolitis of the left gastric artery have been discussed. Suggestions in the diagnosis and management of these fistulae have been made.

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DISCUSSION

DR. CHARLES H. WATT, JR. (Thomasville): I enjoyed Dr. Byrd's paper very much. I would like to present this case because of its bizarre nature.

(Slide) In reviewing the literature, I have been unable to find a case similar to that of a

29-year-old man who had been told for years that he had a duodenal ulcer and had been medically treated for it. An acute episode of epigastric pain, leukocytosis, and fever had brought him into our hospital. He had lost weight and complained of intermittent diarrhea.

A GI series showed a large fistulous tract (slide) between the second portion of the duode-