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JEJUNAL ULCER

SOME OBSERVATIONS ON ITS COMPLICATIONS AND THEIR TREATMENT

By D. P. D. Wilkie, M.Ch., F.R.C.S.

of Edinburgh, Scotland

PROFESSOR OF SURGERY IN THE UNIVERSITY OF EDINBURGH

The problem of jejunal ulcer is one of real, if somewhat melancholy, interest to the surgeon. It is one of his own producing and is admittedly difficult of solution. The operation of gastrojejunostomy, at one time regarded as one of the most beneficent of surgical procedures, is now considered by many surgeons as an unjustifiable measure in the treatment of peptic ulcer. On the Continent of Europe gastric resection has largely replaced the short-circuiting operation, but in Britain and in America opinion has not swung over to the more radical practice, at least in the treatment of duodenal ulcer.

Jejunal ulcer is unquestionably a serious condition and prevention is simpler than cure. Briefly stated, it occurs more frequently in men than in women, and is much commoner after gastrojejunostomy for duodenal ulcer than it is after the same operation for gastric ulcer. Its incidence is variously stated at from 2 per cent. to 40 per cent. by different writers, and it would certainly appear to be commoner among the Teutonic and Semitic races than among those of Anglo-Saxon stock. Whilst it is difficult to give accurate figures regarding a condition which is not always confirmed by operation, my own figures show the incidence to be approximately 3.5 per cent. of all gastrojejunostomies for ulcer. Further, it appears to occur much more frequently in patients who, before operation, had a high gastric acidity and little gastric retention. It occurs but rarely in patients with old-standing pyloric or duodenal stenosis and with low gastric acidity. It was in the treatment of the latter type of case that the reputation of the operation of gastrojejunostomy was founded, and had it been restricted to this type the problem of jejunal ulcer would not be the burning one it is to-day.

In my experience the most effective preventive measure is to avoid a gastrojejunal anastomosis in all cases of duodenal ulcer with high acidity and little or no stenosis, and to employ either gastroduodenostomy or some form of plastic operation at the pylorus in such cases. As infection is another factor in the etiology, the eradication of septic foci in teeth, tonsils, appendix and gall-bladder should form an essential part of therapy in ulcer cases. Further, the injudicious or heavy-handed use of clamps in the operation of gastrojejunostomy may determine an area of lowered vitality which may fall a prey to the acid chyme in the early post-operative period.

The tendency to regard the operation as the cure rather than as an incident in the treatment of peptic ulcer, with consequent failure to insist on care in diet and to exhibit alkalies during the early months of convalescence, is still all too common. The sensitive jejunum must be sheltered from hyperacid gastric juice till such time as it has acquired immunity, and any neglect to observe this reasonable precaution must inevitably lead to a high incidence of jejunal ulcer.

Pathology.—The distinction between gastrojejunal and jejunal ulcer is more of academic than practical interest. The suture alone will not determine an ulcer and, whilst devitalization at the suture line must of necessity play a part when the other ulcer-determining factors are operative, it is common knowledge that the ulcer is just as common at some distance from as on the line of suture. We may, therefore, consider the two types of ulcer as essentially one and the same. My experience leads me to believe that in the majority of cases the onset of jejunal ulcer follows hard on the operation although the recumbency and the initial care in diet, which characterize the immediate post-operative period, may to some extent mask the symptoms. Certainly it is true that the patient who complains of acidity and heartburn during the early post-operative stage is a strong candidate for the ranks of jejunal ulcer cases.

Apart from the persistent dyspepsia which is the common lot of sufferers from jejunal ulcer, certain alarming and disabling complications are frequently encountered. Some of these I will but mention, others I wish to deal with in greater detail.

Recurring hæmorrhage is the most frequent and the most difficult to treat. It calls for surgical treatment preceded by blood transfusion.

Perforation into the free peritoneal cavity, whilst uncommon, is always serious owing to difficulties of satisfactory closure without compromising the gastrojejunal outlet. If the immediate dangers are survived, a second operation, to treat the ulcer, is usually required and presents a formidable technical problem.

Subacute perforation with the formation of an inflammatory mass, situated to the left of the umbilicus, calls for conservative treatment until such time as the inflammatory reaction has subsided. Thereafter surgical interference must be undertaken. If the local conditions permit, the region of the anastomosis must be freed and a partial gastrectomy performed. When the patient's general condition is poor, and inflammatory infiltration of the mesocolon and root of the mesentery is such as to present formidable obstacles to a safe resection, I have found that reasonably good results follow a double short-circuiting operation, *viz.,* a gastroduodenostomy to exclude the old ulcer, and a duodenojejunostomy to exclude the region of the jejunal ulcer.

Penetrating Jejunal Ulcer.—It is usual to find the ulcer just at the stoma, alongside it or just beyond. Occasionally, however, the ulcer may be found in the jejunum proximal to the stoma. In such cases it may penetrate into the mesocolon and the posterior abdominal wall, just as a posterior gastric ulcer penetrates into the pancreas. Excision of such a penetrating ulcer may

lead to a wound of the superior mesenteric vein and it should not be attempted. In a very pronounced example of such an ulcer in the proximal loop, a completely satisfactory result followed the removal of the gastroenterostomy stoma, closure of the stomach and the jejunum, the establishment of a gastroduodenostomy opening to exclude a stenosing duodenal ulcer, and a duodenojejunostomy to short-circuit the jejunal ulcer.

Secondary Duodenal Ileus.—I wish to draw attention particularly to the occurrence of duodenal stasis as a factor in both the pathological and clinical pictures of many cases of jejunal ulcer and especially cases of long standing. The tendency to thickening and fibrosis in the region of the stoma leads, on the one hand, to a gradual narrowing, and in some cases a potential, if not actual, occlusion of the gastroenterostomy opening, and, on the other hand, to an inflammatory induration of the root of the mesentery which interferes with the efflux from the duodenum. In the treatment of such old-standing cases special measures must be taken to drain the partially obstructed duodenum if complete relief is to be gained. In some cases drainage of the duodenum by the establishment of a duodenojejunostomy stoma may be all that is necessary; in others this operation must be associated with a direct attack on the jejunal ulcer and the original stoma.

The following two cases illustrate this point. They represent extreme degrees of the factor of duodenal obstruction, a factor which in minor degree is present in a large number of cases.

CASE I.—A. M., aged sixty-two. Twenty-five years ago had a gastrojejunostomy done for duodenal ulcer. He was well for some years then he began to have recurring attacks of indigestion and on two occasions had melæna. For the past ten years has had increasing discomfort after food, great flatulence and occasional vomiting of large quantities of fermenting bile-stained fluid. For the past five years had been in the habit of passing a stomach tube daily and washing out his stomach. Every now and then he would get attacks of pain and distention. He had to eat very sparingly and consequently had slowly but steadily lost weight.

On examination a large splashing stomach, and what was taken to be a splashing duodenum, were made out. A barium meal examination showed nothing passing through the stoma, great retention in the stoma and a mega-duodenum with great retention in spite of active writhing peristalis. (Fig. 1.)

A diagnosis of jejunal ulcer, with stenosis of the stoma and pronounced secondary duodenal ileus, was made and operation with a view to draining the dilated duodenum recommended.

Operation.—A mass of fibrous tissue surrounded the area of the stoma, which was bound down over the root of the mesentery, and tightly stenosed. The first part of the duodenum showed the scar of an old ulcer but no stenosis. The duodenum in its second and third parts was greatly dilated and hypertrophied. There appeared to be no indication to interfere with the old stoma and accordingly a duodenojejunostomy was performed. He made a most rapid and gratifying recovery, lost all distention, regained his appetite and put on twenty-eight pounds in weight in the following three months.

In a weakly and emaciated individual, over sixty years of age, a direct attack on the site of the old ulcer would have been both meddlesome and dangerous. In this case the duodenal ileus had gradually come to dominate

the clinical picture and the one essential part of the surgical treatment was to drain the obstructed duodenum.

CASE II.—J. F., aged fifty-six. Twenty-two years before had a gastrojejunostomy done for "dyspepsia": no ulcer was seen at operation. Patient was never quite well following the operation and developed symptoms of jejunal ulcer some five years before the second operation. One day patient was seized suddenly with a very acute abdominal pain, suggesting a perforation. He was treated on conservative lines.

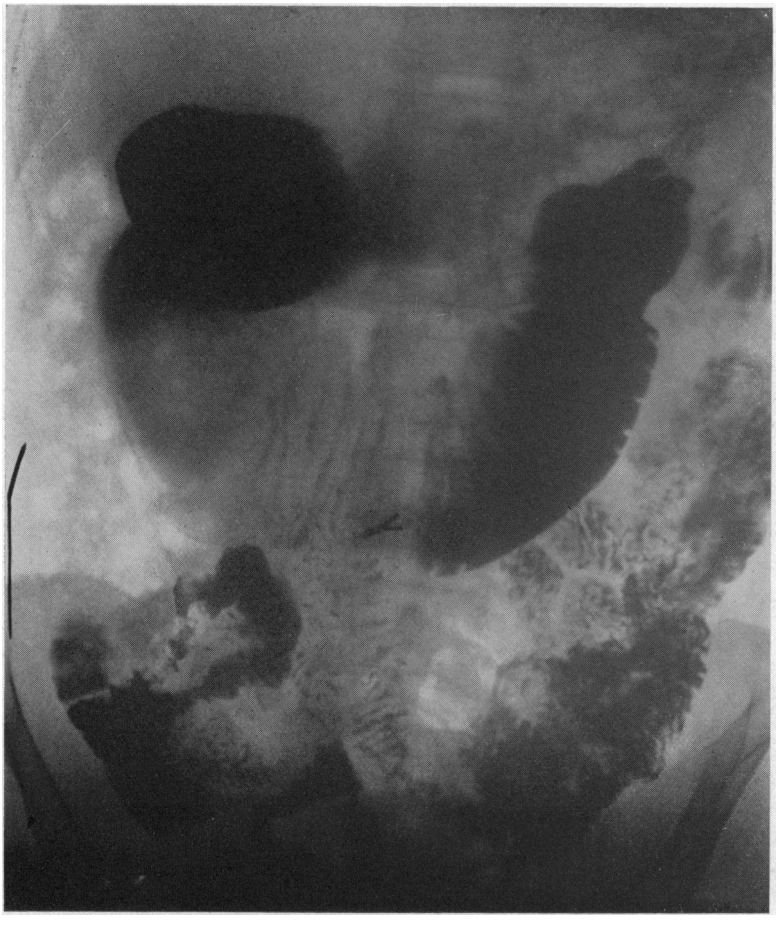

FIG. 1.—Gross duodenal ileus resulting from long-standing jejunal ulcer. Complete relief followed duodenojejunostomy.

Radiograms taken two weeks later showed that the barium was leaving entirely by the pylorus and that there was pronounced duodenal stasis. (Fig. 2.)

At operation there was induration and congestion round a narrowed stoma, and a dilated and hypertrophied duodenum bulged beneath the transverse mesocolon. The first part of the duodenum was dilated and showed no trace of ulceration. The stoma was freed, the opening in the stomach closed and the rent in the jejunum closed transversely. A submesocolic duodenojejunostomy was then performed. In spite of a stormy convalescence the patient made an excellent recovery and is now well.

These two cases show in pronounced degree the development of chronic duodenal ileus as a result of jejunal ulceration. Minor degrees of the condition are more frequent and if demonstrated by X-ray examination should determine the establishment of duodenal drainage as one essential step in whatever operative procedure is adopted. Failure to overcome duodenal stasis will lead to persistence of discomfort and may, if the gastroenterostomy has been simply removed, lead to a recrudescence of duodenal ulcer. The

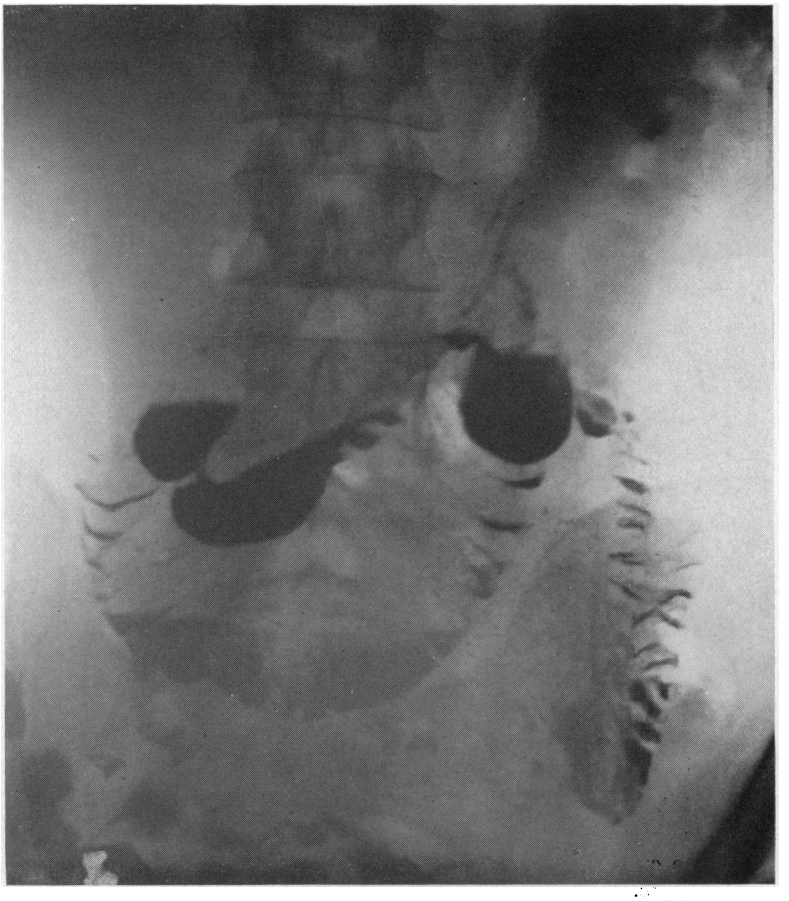

FIG. 2.—Duodenal ileus associated with jejunal ulcer. Complete relief followed removal of stoma and duodenojejunostomy.

following case, although not a true example of jejunal ulcer, illustrates the point in question.

CASE III.—J. P., aged twenty-eight, after some months of symptoms of duodenal ulcer, was seized with sudden abdominal pain, typical of perforation. He was operated on some hours later and a perforated ulcer of the duodenum exposed. The perforation was closed and a posterior gastrojejunostomy performed. After doing well for some days he commenced to vomit bilious material, and this continued for ten days during which time he became progressively weaker and developed generalized tetany.

He was given a barium meal and X-ray photographs taken, when it was seen that

the barium was leaving entirely by the pylorus and was held up in a greatly dilated duodenum.

A second operation was performed, at which the jejunum was detached from the stomach—*restitutio ad integrum.* The patient convalesced slowly and, although suffering from some indigestion and flatulence, was able to return to work. After some months duodenal ulcer symptoms returned, worse than ever before, and continued in spite of medical treatment.

Seen two years after his first operation, he was in poor health and suffering from persistent pain and flatulence.

X-ray examination showed that he had a large duodenal ulcer and marked stasis in a dilated duodenum. (Fig. 3.)

An operation to short-circuit the duodenal ulcer and to drain the dilated duodenum

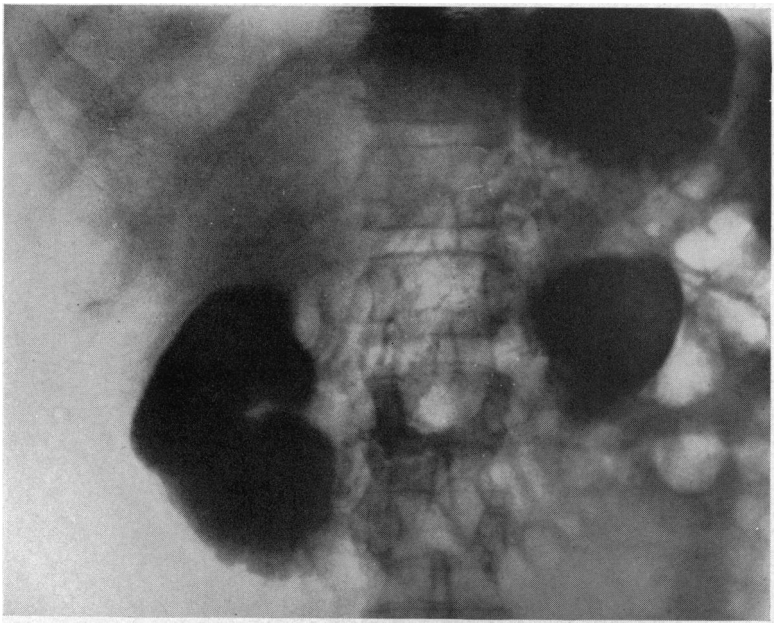

FIG. 3.—Chronic duodenal ileus persisting after removal of stoma with recrudescence of duodenal ulcer. Gastroduodenostomy and duodenojejunostomy gave immediate relief.

was recommended. This was carried out. It was found that in the first coil of jejunum and over the root of the mesentery there were thickening and fibrosis. A gastroduodenostomy to exclude the first part of the duodenum, and a duodenojejunostomy to drain the duodenum, were performed.

The patient was immediately relieved of all his former symptoms and made a rapid and complete recovery.

In this case the conditions were exactly comparable to those found so often in jejunal ulcer cases, and the two-fold anastomosis which was made is the operative measure which can be carried out with comparative safety and success in such cases.

A Jejunocolic or a Gastrojejunocolic fistula.—This is always of grave import. The regurgitation of fecal matter into the stomach destroys all appetite for food and leads to characteristic anæmia, and the entry of par-

tially digested food into the colon causes persistent diarrhœa and loss of weight. (Fig. 4.) The stomach content is foul and septic and all endeavors to clean the stomach by lavage merely accentuate regurgitation of feculent fluid.

Operation under such conditions is always fraught with serious risk to life. The region of the fistula is found engorged and œdematous, the lymph-vessels leading from it are infected, and a clean resection is well-nigh impossible. The mortality from one-stage radical operation is very high (almost 40 per cent.). Where the fistula is small and the general condition of the patient has not been allowed by delay to deteriorate, a one-stage operation, freeing and closing the colon and dealing with the jejunum by resection, possibly followed by partial gastrectomy, may be feasible. In the majority of cases, where the patient's general condition is poor, I believe that a two-stage operation is advisable.

The following case of gastrocolic fistula revealed to me the advantages of a two-stage procedure.

CASE IV.—M. C., aged thirty-two. Troubled with stomach for ten years. Periodic attacks of pain coming on one hour after meals, associated with much flatulence and frequently accompanied by vomiting. For two years prior to admission the pain had been more persistent than ever before. Six months before coming to hospital he was wakened in the night with severe abdominal pain. He vomited on several occasions and noticed that the vomit was dark brown in color and feculent in odor. The pain lasted for twelve hours. It was diagnosed as being due to appendicitis and he was removed to his local hospital where his appendix was removed. During the five weeks he was in hospital he had constant feculent-smelling eructations. For six months thereafter he steadily lost weight from absence of appetite and persistent diarrhœa. The foul eructations made him shun company and live by himself. The patient was thin and emaciated. Pale with a tinge of cyanosis in lips, cheeks and ears. Nothing to be made out on abdominal palpation.

Barium meal and barium enema showed large fistula between stomach and splenic flexure of the colon. (Fig. 5.)

First Operation.—August 27, 1931. Gas and oxygen. Left paramedial incision. Fistula found between posterior wall of stomach near lesser curve and splenic flexure of colon. In the area of the fistula both stomach and colon were greatly congested and œdematous, and there was a considerable amount of fluid content in both viscera. It was deemed inadvisable to detach the colon from the stomach where both were fixed, infected and œdematous, and it was decided to exclude the portion of colon involved in the fistula. Accordingly the phrenicocolic ligament was divided and the splenic flexure mobilized. The colon was then divided by the cuff method, three inches proximal, and again three inches distal to the fistula. The ends of this isolated loop were then ligated and invaginated. An end-to-end anastomosis, with one row of interrupted linen sutures over clamps, was then performed to re-establish the continuity of the colon. (Fig. 6.) To minimize the risk of leakage a tube cæcostomy was performed. The patient made a rapid recovery.

Eleven weeks later patient was readmitted. He appeared to be in robust health. He had put on twenty-nine pounds in weight and had lost his anæmia.

X-ray examination showed a penetrating ulcer opening into the attached loop of colon.

Second Operation.—November 16, 1931. The loop of colon was found with dif-

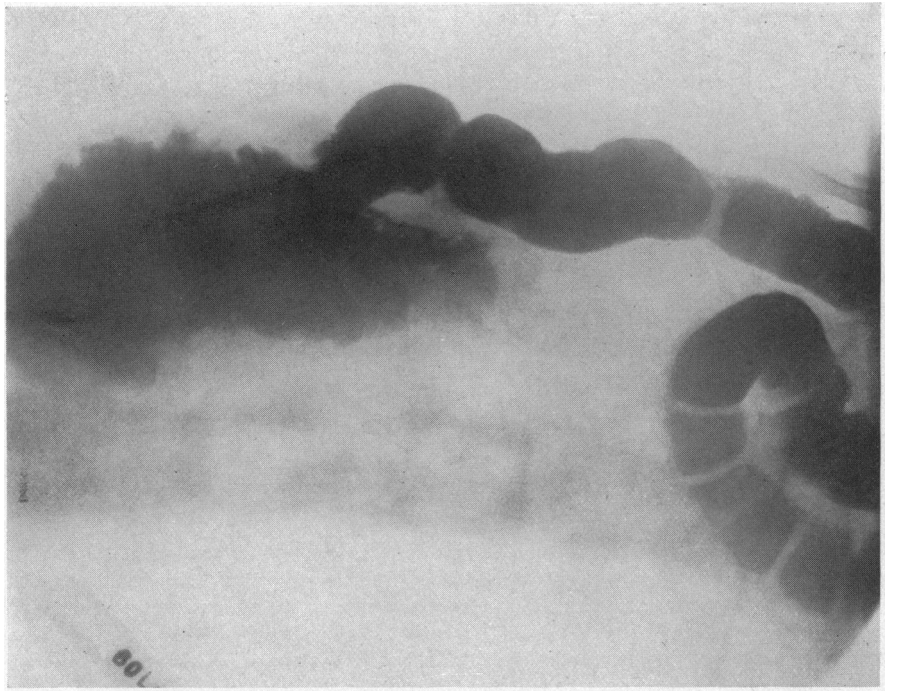

FIG. 5.—Gastrocolic fistula resulting from perforation of large gastric ulcer into splenic flexure. Opaque enema shows barium entering stomach.

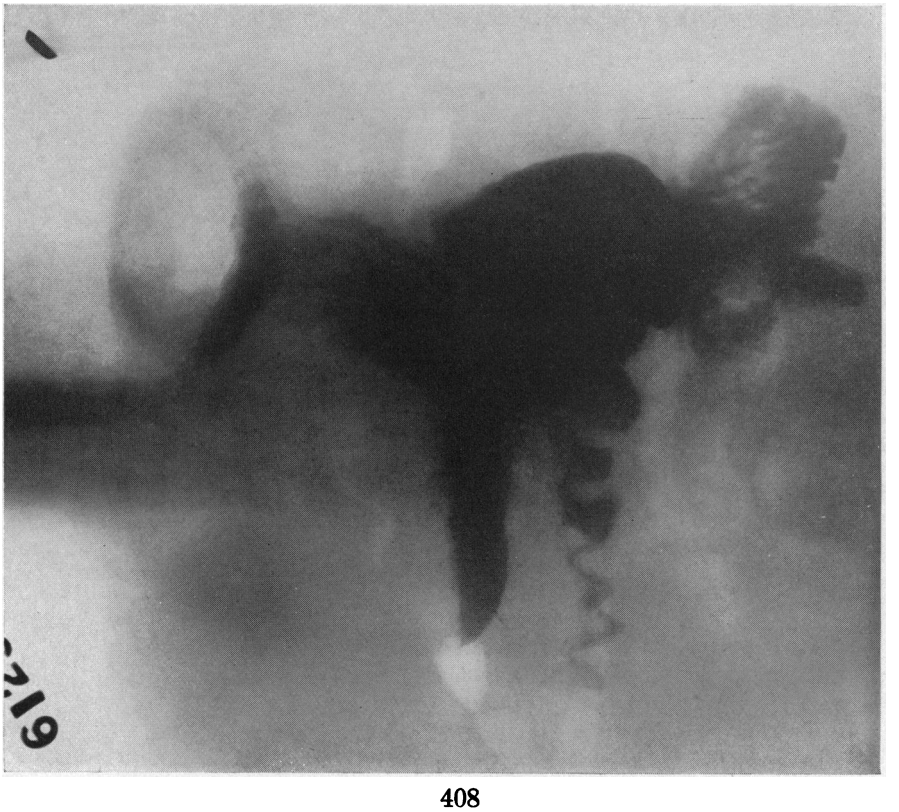

FIG. 4.—Gastrojejunocolic fistula. Immediately after meal barium seen in dilated jejunal coil and transverse colon.

ficulty, buried in adhesions. It was practically empty and was pale in color. The loop was readily excised along with the gastric ulcer, and a portion of gastric wall around it.

Patient made a rapid recovery and has remained in good health.

I believe that the two-stage method practised in this case is the method of choice for the larger gastrojejunocolic fistulæ, where marked fecal regurgitation is occurring, where the patient is anæmic and all the tissues around the fistula are œdematous, friable and infected. By excluding the portion of colon involved in the fistula, and allowing a period of some weeks or months to elapse, a relatively clean field can be obtained for the second and major stage of the operation.

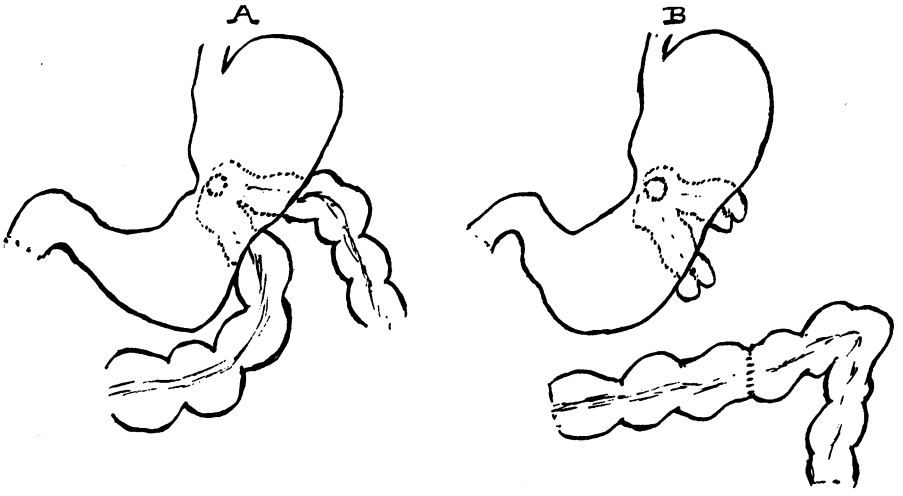

FIG. 6.—(A) Gastric ulcer perforated into splenic flexure. Gastrocolic fistula. (B) Portion of colon isolated, end-to-end union re-establishing continuity.

SUMMARY

(1) The two main factors in producing jejunal ulcer after gastroenterostomy are high gastric acidity and infection.

(2) A very high gastric acidity should be regarded as a contra-indication to gastroenterostomy—a gastroduodenostomy should be preferred.

(3) All septic foci in teeth, tonsils, appendix and gall-bladder should be dealt with in ulcer cases.

(4) Partial gastrectomy or removal of the stoma, followed by gastroduodenostomy, are the operations of choice in jejunal ulcer.

(5) The frequent occurrence of secondary duodenal ileus and the necessity for treatment of this by duodenojejunostomy is emphasized.

(6) In dealing with cases of jejunocolic or gastrojejunocolic fistula, the advantages of a two-stage operation should always be considered.