

A NEW OPERATION FOR CHRONIC PEPTIC ULCER

BY

STANLEY O. AYLETT, M.B., B.Sc., F.R.C.S.

*Surgeon, Metropolitan Hospital; Assistant Surgeon,
Westminster Hospital Teaching Group
(Gordon Hospital)*

In spite of a general acceptance of the operation of subtotal gastrectomy as the method of choice in the surgical treatment of chronic peptic ulcer, there can be few surgeons who remain wholly satisfied with this procedure. The operation is a mutilating one, and if the danger of anastomotic ulceration is to be avoided removal of most of the stomach is necessary.

With this extensive removal the physiological functions of the organ largely disappear. It can no longer serve as a receptacle for a normal amount of food; it can no longer macerate the ingested contents by its muscular activity so that they are discharged as fluid chyme into the small intestine; and the digestive action of its secretions is lost. It is not surprising, therefore, that in a considerable proportion of cases post-operative sequelae of an intractable type result. At their worst, these may take the form of the "dumping syndrome"; at their best, of lesser digestive disturbances such as periodic vomiting, a sense of fullness after anything but a small meal, and even periodic pain necessitating the continuation of a modified ulcer regime.

The dissatisfaction with the end-results of subtotal gastrectomy, especially in cases performed for duodenal ulcer, was best expressed by the enthusiasm with which the alternative operation of vagotomy was welcomed. But the post-operative complications of this procedure and the uncertainty of its ability to cure the ulcer have disappointed the high hopes with which it was introduced.

Theoretical Basis

The purpose of this preliminary communication is to record a new operation for the treatment of chronic peptic ulceration, which, though originally designed for cases of duodenal ulcer, may with minor modifications be used for the treatment of nearly every case of gastric ulcer as well. The main merit of this operation lies in the fact that, as well as curing the ulcer and permanently reducing the acidity, the patient is left with an intact stomach. Gastric function is therefore retained, and the post-operative sequelae associated with gastrectomy are absent.

Peptic ulceration of the distal part of the duodenum or the jejunum is so rare as to be a surgical curiosity. That the mucosa of these structures has no inherent ability to withstand the ulcerative action of gastric juice is shown by the common occurrence of anastomotic ulcer when they are anastomosed to the stomach as in a gastro-enterostomy. It seems clear, therefore, that the alkaline secretions emerging from the biliary apparatus and from the pancreas must be the normal protecting influence. Provided that these secretions are allowed to mix adequately with the stomach contents, their alkalinity is sufficient to neutralize the acidity of the gastric juice and so prevent ulceration. After a gastro-enterostomy there is little mixing of the gastric and the duodenal secretions in the stomach, as the latter are short-circuited over the spur of the anastomosis into

the distal intestine without entering the stomach. Neutralization therefore does not occur and anastomotic ulceration is the result of this failure. It is reasonable, then, to assume that, if this highly alkaline secretion were introduced direct into the stomach, there would be a constant neutralizing effect. The aim of gastrectomy or vagotomy would therefore be achieved, but without removing a large part of the stomach or interrupting its nerve supply. It is on these principles that the present operation has been devised.

Operative Technique

The abdomen is opened by the customary paramedian incision, and the greater and lesser omenta divided from the pyloric end of the stomach and the adjacent duodenum for some 4 cm. When the ulcer is in the duodenum and well away from the pylorus, the duodenum is cut across just distal to the pylorus and its end closed and invaginated, as in a gastrectomy. The proximal end of the duodenum remains open and gastric contents are prevented from spilling into the wound by a non-crushing clamp placed across the pyloric end of the stomach.

The first loop of the jejunum is then drawn up into the wound. The mesentery of the jejunum is divided at a point some 7 to 8 cm. from the duodeno-jejunal flexure. The division extends outwards to the bowel and downwards towards the root of the mesentery, but not so far as to jeopardize the blood supply of the proximal loop. In actual practice the division of the mesentery extends for about 3 cm. The jejunum is then divided between non-crushing clamps (Fig. 1). A few bleeding points on the edge of the bowel will then require ligation.

The distal cut end of the jejunum is then brought over towards the open end of the duodenum, and to this it is anastomosed (Fig. 2). No difficulty is experienced in approximating these two ends, and at the completion of the anastomosis the line of union lies loosely over the transverse colon in the region of the hepatic flexure. On completion of the anastomosis the lumen should admit the tips of two fingers.

The upper part of the stomach is now drawn downwards from its subcostal position, so that an area on the anterior surface at the junction of the upper third and lower two-thirds is exposed in the wound. The proximal limb of the jejunum is brought in front of the transverse colon and the open end approximated to this upper portion of the stomach by a continuous layer of seromuscular sutures. These are inserted so that each stitch on the jejunal side takes up a broader bite of tissue than on the stomach side. By so doing a breadth of about 3 cm. of seromuscular jejunal coat is approximated to about 2 cm. of similar coat of stomach. The object of anastomosing the normal width of the jejunum to a lesser width of stomach wall—a device that is carried out with all the layers of the anastomosis—is to produce at this site a final lumen between intestine and stomach capable of admitting the tip of the little finger only. The stomach is then opened through an incision little more than 1 cm. long, and a continuous suture is passed through all layers of the adjacent walls of the stomach and jejunum. A Connell inversion stitch is used for the approximation of the anterior layers in order to prevent any mucosal eversion. As already noted, throughout this continuous suture each stitch on the jejunal side includes a broader bite of tissue than its counterpart on the stomach side, so that the final

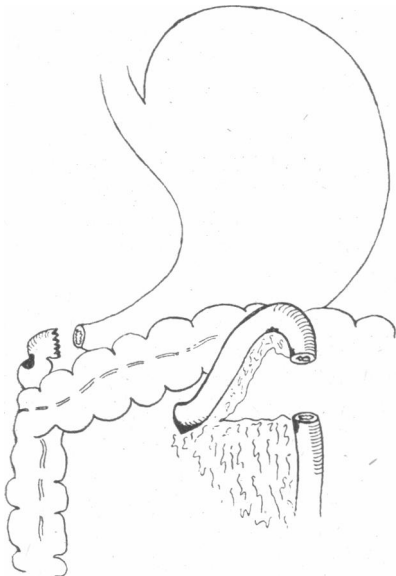


FIG. 1.—The first part of the duodenum has been divided and the end invaginated. The jejunum and its mesentery have been divided.

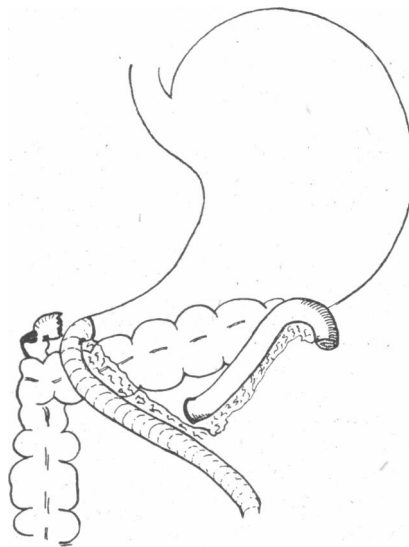


FIG. 2.—The distal cut end of the jejunum has been anastomosed to the cut end of the duodenum.

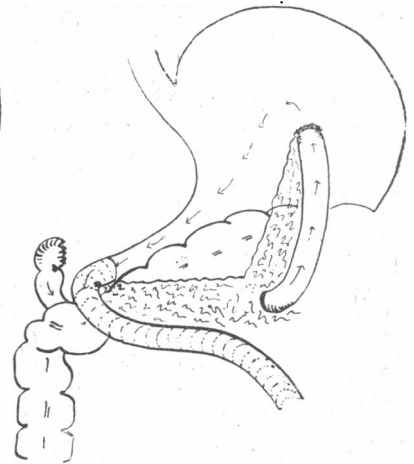


FIG. 3.—The operation has been completed by implantation of the proximal end of the jejunum into the anterior wall of the stomach at the junction of its upper and lower two-thirds.

stoma is of the size indicated above. An anterior sero-muscular stitch completes the anastomosis (Fig. 3).

When the bowel is returned to the abdomen the newly sited loops of the jejunum lie comfortably and are under no tension, one in front of each end of the transverse colon, the intervening V of mesentery covering the medial portion.

Various Technical Modifications

In those cases in which the duodenal ulcer is very close to the pylorus, the pyloro-duodenal region is divided, not through the duodenal side of the pylorus, but on the stomach side of the pyloric vein. The difficulties and dangers associated with the invagination of a duodenal stump through a scarred, oedematous, and thickened area are thus avoided, the closure being made through tissue which will hold sutures without their cutting out. In a gastrectomy it is, of course, essential to remove the mucosa of the pyloric antrum in order to avoid the hormonal stimulation of acid secretion. In this procedure, however, depending as it does not on the prevention of acid secretion but on its neutralization, such is not the case. It has been suggested to me by Professor C. A. Pannett that it may be best in such cases to excise the part of the duodenum which contains the ulcer and the adjacent pylorus, and to close the duodenum in its second part. This may well prove to be the better way in those cases in which the mobilization of the duodenum is not prevented or made difficult by surrounding scar and adhesion formation, but when these are present the procedure discussed above will probably remain the method of choice.

In the operation as originally planned it was thought that the pylorus would have to be retained in order to leave the patient with a stomach having a normal emptying time. Experience has shown, however, that the anastomosis can be carried out on either side of the pylorus without interfering at all with the time of emptying. Post-operative barium meals show a normal emptying time following anastomosis at either site, and it is impossible to distinguish one radiograph from the other.

Where the operation is performed for cases of gastric ulcer, the usual procedure is carried out, but in addition the ulcer is excised. This entails separation of either the greater or the lesser omentum from the stomach, depending on the site of the ulcer. After wedge excision of the ulcer and restoration of continuity, the omentum is resutured to the stomach wall. In these cases, if the ulcer has become adherent to the pancreas and to the transverse mesocolon, the mesocolon may be opened; in one case in which this occurred the adjacent limb of the jejunum was brought through this opening posterior to the transverse colon before being sutured to the anterior stomach wall.

Post-operative Progress

There is no doubt that this operation produces less shock than a gastrectomy, and all thirteen patients on whom the operation has been performed have been in excellent condition on their return to the ward. Little blood is lost during the operation, and only once has blood been given in the theatre. In this case the patient had had a third severe haematemesis, which had only recently ceased.

Of these thirteen patients, three had gastric ulcer, nine had duodenal ulcer, and one a double ulcer. All had been under medical care, mostly for several years before the operation; three had had previous perforations and five severe haemorrhages. In only one of the duodenal ulcer patients was post-operative gastric suction necessary, but two of the gastric cases needed such treatment for a few days. The case of duodenal ulcer requiring suction was one of the earlier cases operated upon, and the anastomosis between the pylorus and the jejunum had probably been made too small: oedema at the suture line no doubt caused the temporary obstruction. Apart from these minor post-operative complications, convalescence has been entirely uneventful. Grading of the diet in the first few days after operation has followed the usual post-gastrectomy routine up to the level of a full hospital diet.

It would be presumptuous to assess the final results of this operation on the basis of the small series of cases

here presented and of the brief follow-up period, which is measured only in months: this must be left for a later occasion. It is, however, permissible to report the immediate post-convalescence progress of these patients. Twelve out of the thirteen are on a full diet; of these, ten will admit to no symptoms, even under pressure of direct questioning; two say that there is an occasional sense of fullness after having eaten a full meal; and the last patient, who has barely finished her convalescence, complains of periodic nausea, but says that this is improving. Freedom from pain is complete and all the patients are enjoying their food. Those who had lost weight before the operation, and who have been followed up for at least three months, have recorded steady gains in weight. No suspicion of a dumping syndrome has been noted, and the constant presence of bile in the stomach has produced no ill effect.

The likelihood of anastomotic ulcer seems remote in this type of operation, where the whole of the alkaline pancreatic and biliary secretions are transferred to the stomach. Post-operative test meals have been carried out, and all show a reduction to normal levels of acidity or to complete achlorhydria. As a routine, samples of gastric juice are now aspirated at hourly intervals over a period of 24 hours while the patient is on a full hospital diet; this would seem to be a better way of getting a true picture of the changing acidity of the stomach.

While the operation described is still in the experimental stage, its initial success warrants an extensive trial. No surgeon would wish to remove the stomach in the treatment of peptic ulcer if such a drastic step could be averted. The avoidance of resection may lie along the lines suggested in this preliminary report.

I would like to express my grateful thanks to Professor C. A. Pannett, with whom this operation has been fully discussed, for his encouragement and interest. My thanks are also due to my colleagues, Dr. B. Armstrong, Dr. C. B. Lewis, and Dr. S. Guerrier, who have given anaesthesia in the first exacting cases of a new operation.

Recent contributions to the Scandinavian medical press give expression to a quite lively dissatisfaction with the multiplicity, complexity, and cost of laboratory and other tests now in vogue in many hospitals. Dr. Lennart Norrlin, of Stockholm, in *Svenska Läkartidningen*, December 8, 1950, page 2843, has nothing good to say of radiological examinations in cases of acute gastric or duodenal perforation. He refers to cases in which a radiologist's report has induced him to undertake an exploratory laparotomy, though its hopelessness had seemed obvious to him from the outset. Proper exercise of the five senses is, in his opinion, to be preferred to laboratory reports; and the hospital chief who delays his first attendance on a new case by several days in order to equip himself with a handful of laboratory reports is no model for his juniors. Referring to the prodigality with which radiologists dispense their skiagrams, Dr. Norrlin mentions a case in which a relatively simple fracture of the leg below the knee was illustrated by 17 skiagrams, of which 13 were superfluous. In a more general approach to the subject, Dr. Ole Jacob Broch, of Oslo, in *Tidsskrift for den Norske Laegeforening*, November 15, 1950, page 728, queries the usefulness of many fashionable radiological and laboratory tests. He points out that in elderly folk there are always radiologically demonstrable changes in the spine, but that to hold them responsible for all the patient's symptoms may be wide of the mark. In 1949, Roentgen diagnosis cost the health insurance funds in Oslo fully 14% of all the doctors' charges. As for electrocardiograms, Dr. Broch suggests that watching the effect on a patient of walking upstairs may be much more instructive.

A RARE BLOOD GROUP ANTIGEN OCCURRING IN NEGROES

BY

ELIZABETH W. IKIN, B.Sc.

AND

A. E. MOURANT, D.Phil., D.M.

(From the Blood Group Reference Laboratory,
Medical Research Council)

Landsteiner, Strutton, and Chase (1934) found, in the serum of 2 out of 12 rabbits that had received injections of the red cells of a negro, an antibody which agglutinated the cells of the donor and was subsequently found to agglutinate the cells of 14 out of 191 negroes but of only 2 out of 387 white persons. All those whose cells gave positive reactions were of Group N or MN. Wiener (1943) tested a further 25 white persons, who were all negative.

When testing a series of Nigerians we found one who gave positive results with three rabbit anti-N sera and negative results with two rabbit anti-M sera. With a third rabbit anti-M serum which had given normal results with many Europeans this subject gave strong agglutination. The specimen was further found to be negative with two human anti-M sera. It occurred to us that we had possibly rediscovered the antibody described by Landsteiner *et al.*, and we proceeded to look up previous results obtained with this serum, and to watch for further anomalies. One more group N Nigerian was found to be positive. In all we were able to find 43 group N negroes who had been tested with this serum, of whom two, as already stated, were positive, while all of the 173 group N Europeans and 15 group N Asiatics so tested were negative. It is probable that many other Europeans had been tested with negative results. The large number of negative Europeans shows that the antigen cannot have been Kell, Lutheran, or any of the commoner known blood group antigens.

We later tested 26 group N specimens from South African Bantu, which were kindly sent to us for the purpose by Dr. A. Zoutendyk. All were negative with several separately absorbed batches of the original rabbit serum, but the serum may by this time have deteriorated, and we had no positive control.

Of the two positive persons, the first was A₁, N, cDe/cDe (or cDe/cde) and the second O, N, CDe/CDe (or CDe/Cde).

It is unfortunate that when these anomalous agglutinations were found the rabbit which had produced the antibody had long been dead; there was little left of its serum, and that little was of course very old. We made repeated attempts to secure further specimens of blood from the positive subjects in order to immunize further rabbits, but no specimens could be obtained.

We do not claim to have proved that the antigen found by us is the same as that described by Landsteiner *et al.*, but the resemblance is suggestive. The difference in frequency between negroes and Europeans for the antigen of Landsteiner *et al.* is statistically highly significant, and this fact alone makes it desirable to recover the antibody and use it for further anthropological investigations. The association with N and MN is significant but not highly so. If the antibody is