published confusion becomes apparent in the interpretation of the upright wave in Lead I. Its nature does not seem to have been defined by direct measurement, but several of the tracings shown are demonstrably capable of the same interpretation as is given here, and in all probability reversal of the leads would have dismissed all doubt.

Preponderance of the right side is to be expected in view of the murmur, which is almost certainly of congenital origin, and most likely indicates a septal defect.

Parsons Smith, in recording two similar cases during the war, considered that their early cardiac breakdown was brought about through the relation of the right-sided heart to the solid liver, instead of to the more yielding

FIG. 2.

stomach, this hampering the physiological dilatation on exertion. Such effect was not produced in persons who had complete transposition of their viscera, because the heart was then related to the stomach. This is very likely the case, and it is therefore the more remarkable that this man was able to serve in the Navy for twelve years, including the war period, before his heart broke down.

The complaint of pain on exertion, involving the left chest and arm, is of interest. Pain due to disease of the right coronary artery, or to infarction of its area of supply, may be felt on the right side of the chest and down the right arm in a person whose heart is normally situated. In this case the distribution is reversed, presumably because the venous ventricle from which it originates is transposed.

The notes of this case are recorded by the kind permission of Dr. C. D. Lindsay, under whose care the patient was admitted to the South Devon and East Cornwall Hospital in June, 1932.

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JEJUNOSTOMY IN THE TREATMENT OF MASSIVE GASTRIC ULCER

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The treatment of simple ulcers of the body of the stomach was discussed at a meeting of the Surgical Section of the Royal Society of Medicine in July, 1931. There was, however, no definite pronouncement made on the value of jejunostomy in the treatment of cases of the more "massive" and difficult type. The extent of any opinion with regard to jejunostomy was indicated by Mr. Gordon-Taylor in the following words: "For the extensive 'letter-box,' or inaccessible, ulcer I have little experience and less success with jejunostomy." At about the time that this statement was made I had had two cases which demonstrated in such a striking and convincing way the value of jejunostomy that I feel constrained to record them as a small contribution to this subject.

CASE I

A man, aged 38, who had been invalided from the Navy on account of his gastric ulcer, first came under my care in October, 1930. He commenced to have symptoms of a gastric ulcer in 1924, his pain coming on two hours after food. The condition progressed in the usual way, with intermissions of freedom, until he had to enter a naval hospital in July, 1929. After six weeks of "alkali treatment" he had a small haematemesis. In September, 1929, a posterior gastro-jejunostomy was performed, which, in a subsequent skiagram taken after a barium meal, was seen to be functioning. The operation afforded only temporary relief, and in July, 1930, he had a severe haematemesis, was subsequently invalided out of the Service, and referred to me at the Royal Portsmouth Hospital by his civilian doctor.

When I first saw him he was having constant attacks of pain, and was able to eat very little food: he had marked anaemia, and looked very ill. A barium meal revealed that no food was passing through the stoma, but that all of it went through the pylorus, which was deformed. Operation was advised. He was admitted to hospital on January 7th, 1931, having had continuous pain, from which he could get no relief, for a month. He was put on strict medical treatment in the hope of improvement, but nothing would relieve his pain, and so, in spite of his bad general condition, it was decided that operative treatment must be attempted as the only possible hope of recovery.

On January 14th the abdomen was opened under high percaine spinal anaesthesia and gas and oxygen. Great difficulty was experienced from the beginning on account of dense adhesions to the previous operation wound, so that much time was taken up in revealing the condition of the viscera. Eventually, there was found to be a large inflammatory mass, which involved the lower half of the stomach, the transverse colon, and a loop of jejunum. With considerable care this mass was freed, and it was found that anything like a radical operation would have meant the resection of a portion of the stomach, transverse colon, and jejunum—a very formidable undertaking. At this point the patient became very collapsed, and any operation of such a nature was quite out of the question; consequently the mass was replaced and a jejunostomy performed, care being taken to leave plenty of jejunum above the opening to allow of a subsequent Polya type of partial gastrectomy. The jejunostomy tube was brought through the left rectus muscle and the abdomen closed. The patient made a very good recovery from this operation, and all feeding was carried out through the jejunostomy. As he still had some gastric pain, alkalis were given by the mouth for a short time, but soon these were discarded; nothing at all was then given by the mouth, and he complained of no more pain. With the absence of pain and with the increase in nourishment that the jejunostomy afforded, the improvement was marked; but still

further to improve his condition a blood transfusion was given on February 25th, six weeks from the first operation.

On March 18th, nine weeks from the first operation, the abdomen was reopened. Considerable time was again needed for dealing with adhesions, but when this first stage had been accomplished the inflammatory mass was found to be very much smaller, and the oedema which had been so marked and prominent at the first operation was now gone. The improvement was so great that it was clear that a partial gastrectomy was now quite feasible, without the necessity for resecting any of the colon. The first step was to isolate as far as possible the loop of jejunum that ran up to the mass. This loop was adherent to the transverse mesocolon and to the transverse colon, and had to be cut away from the latter. In doing this an opening appeared in the jejunum; the opening was not closed, but was wrapped up in a swab, as it appeared to come in such a position that it might be useful for the subsequent anastomosis to the stomach. It afterwards transpired that this opening was the relic of the gastro-jejuno-stoma, though this fact was not clear at this stage. The jejunum now being free it remained to be seen if the stomach could be separated from the colon. To this end the first part of the duodenum and pylorus were exposed, with some difficulty, and now it appeared that here was the seat of the original ulceration, for all this portion was thickened and scarred. The first part of the duodenum was divided in the usual way for a Polya type of partial gastrectomy, and an attempt made to turn the stomach over to the left. This was not possible until the stomach had been separated from the transverse colon, and, whilst this was being done, a hole appeared in the stomach when it was cut away from the colon. The colon was forming the floor of the ulcer in the stomach, and the weak spot in the colon wall, constituting the floor of the ulcer, was oversewn and covered with a piece of omentum. The stomach could now be turned over quite freely, and one now expected to find the original gastro-jejuno-stoma; this was not present, and therefore it became apparent that it had already been dealt with and that the inflammatory mass had been due to gastro-jejunal ulceration at the original stoma. Furthermore, it was clear that the gastro-jejuno-stoma must have been performed with quite a long loop. The partial gastrectomy was then completed as quickly as possible with an ante-colic loop, and the opening already present in the jejunum was excised, extended, and used for the customary end-to-side anastomosis of the stomach to the jejunum. The abdomen was closed and a blood transfusion given, the patient's condition being quite good at the termination. He made a very quick recovery, and now, a year from the operation, is healthy, can eat well, and has regained his normal weight.

A consideration of the findings in this case points to the conclusion that the original gastro-jejuno-stoma was performed with rather a long loop to the jejunum, and that gastro-jejunal ulceration supervened. It would appear that the resulting inflammatory reaction and fibrosis caused the transverse colon to be drawn down to the stoma, and eventually drew it between the stomach and jejunum; thus, finally, the colon formed the bed of a gastric ulcer on the one hand and a jejunal ulcer on the other. Possibly the opening in the transverse mesocolon through which the loop of jejunum was brought was also made rather unusually close to the colon itself.

CASE II

The second patient, a woman aged about 50, stated that her symptoms started when she was 25, and that at first she had long intervals of freedom from symptoms. Vomiting commenced with the attacks twelve years ago. For one year previous to March, 1930, she had been quite free from any gastric disturbance, but at that date the trouble recommenced and continued until I saw her.

On examination this patient was emaciated, was in constant pain, was vomiting everything she took, and looked like a case of advanced malignant disease. An attempt was made by means of a barium meal exactly to locate the trouble, but this was impossible as she could not retain the meal. Medical measures were tried without relief, and, as the

patient was getting rapidly worse, it was decided that operation was imperative.

On August 25th, 1930, the abdomen was opened under general anaesthesia. The stomach was found to be adherent by its upper two-thirds to the liver and diaphragm; it was impossible to move it or to get to its posterior surface, and the stomach and omentum were markedly cedematous. The question of any operation on the stomach itself was obviously impossible, and therefore a jejunostomy was performed, care being taken to leave sufficient jejunum between the opening and the duodeno-jejunal flexure to allow of a subsequent partial gastrectomy. The patient made a slow recovery, but it was very striking how her pain was at once relieved after the stomach was put at rest. In this case nothing whatever was given by the mouth, not even alkalis. All nourishment was given by the jejunostomy opening for a period of eight months. At the end of that time the patient had gained in weight, had improved in her general condition very much, and was able to get about to a certain extent. At the end of the eight months a barium meal was given, and a condition of hour-glass constriction of the stomach was revealed. There was no indication of active ulceration, and there appeared to be quite a good-sized proximal pouch. It was decided to operate again.

The abdomen was reopened on April 15th, 1931, and, though there were some adhesions, there was no very great difficulty in exposing the affected area. The duodenum was divided and the stomach turned over to the left; the situation of the ulcer was revealed by adhesions of the lesser curve to the left lobe of the liver and the pancreas. There was, however, no great difficulty in separating the stomach from these structures, and the partial gastrectomy was completed in the usual way. An end-to-side anastomosis of the stomach was made to the jejunum, and again the existence of the jejunostomy caused no trouble. As in Case I, feeding was started by the mouth in six hours, and the jejunal feeds were continued for about a week, when the tube was withdrawn; the jejunostomy opening closed rapidly of its own accord. This patient made a good recovery, and one year from the operation she writes: "I am able to do my household duties, take long walks, and enjoy good health; also my weight is 8 stone."

The examination of the portion removed showed a typical hour-glass contraction of the stomach, but there was no sign of ulceration, the mucous membrane merely being thin and adherent over the scar area.

SUMMARY

Two cases of "massive" gastric ulcer are described, in each of which the patient was in such a bad condition that immediate full operative cure was impossible.

The performance in each instance of a jejunostomy allowed both the general and local conditions to be so improved that radical operation became possible.

The jejunostomy quickly removed all the pain of which the patients complained, thus showing that it is rest to the stomach which gives relief in these cases.

One case illustrates that true rest to the stomach will cause complete healing of a large ulcer in eight months, without the use of alkalis. The case also shows that a patient can be adequately nourished for eight months by means of a jejunostomy, and at the same time be rendered fit for an extensive operation.

The jejunostomy in no way hinders the performance of a partial gastrectomy.

One case illustrates the spontaneous separation of a gastro-jejuno-stoma.

Two cases admittedly do not furnish sufficient evidence from which to draw dogmatic conclusions, but the obvious and definite success here would enable the writer to have no hesitation in repeating the procedure should occasion arise. The detailed reports are published in the hope that other evidence of this type of operative procedure may be recorded.

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