is often associated with a high mean cell diameter as shown by these methods, a result which may not be arrived at by other means.

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TWO SUCCESSFUL RESECTIONS FOR CARCINOMA OF PANCREAS

BY

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Two cases of carcinoma of the pancreas in which a resection operation was carried out successfully are described below. The first patient recovered from the operation, gaining 5 lb. (2.27 kg.) in weight, but died five months later from recurrences in the abdomen. The second patient was alive and well when seen 12 months after her operation; she had put on weight, and was able to do her work as a housewife. Up to that date there was no sign of recurrence. The procedure included excision of the caecum, ascending colon, and right transverse colon.

So far no record of a colon excision with the pancreas has been traced in the literature. Hunt (1941) exhaustively reviews all cases of carcinoma of the ampulla of Vater up to that date, and includes synoptic tables showing the type of operation and the results achieved. Cattell (1948) goes more fully into technique, and Brunschwig (1942) reviews the different operative treatments but makes no mention of the colon.

Case 1

A man aged 55 was first seen in October, 1947, when he complained of jaundice of four months' duration. He gave a history of general lassitude, breathlessness, dizziness on exertion, and loss of weight for two years; he said that in the last five months he had lost 19 lb. (8.62 kg.). For 30 years he had had intermittent epigastric pain two hours after a meal, and this was relieved by taking more food and by alcohol. He had had the usual infectious diseases of childhood and also occasional attacks of influenza. In 1917, in Italy, he had had an attack of dysentery, and in 1922 appendicitis, which was treated medically. His mother had died of pulmonary tuberculosis, and his father, at 76 years of age, of heart disease.

On examination he was seen to be a thin spare man, deeply jaundiced. The liver was palpable $\frac{1}{2}$ in. (1.25 cm.) below the costal margin, and the gall-bladder was felt to extend from the ninth costal cartilage to the right iliac fossa. On October 30 he was admitted to a medical ward with a tentative diagnosis of carcinoma of the head of the pancreas.

Operation, November 4.—On opening the abdomen under local analgesia supplemented with open ether (Dr. Goldman)

the gall-bladder was seen to be distended to the caecum and there was the scar of a healed duodenal ulcer. The liver was normal in size and consistency, as were also the abdominal viscera. The pancreas was of hard consistency throughout; around the entrance of the common bile duct there was a stony-hard portion which, by inserting the blunt end of a straight needle, was proved to be composed of tissue and not a stone in the common bile duct. A diagnosis was made of carcinoma of the head of the pancreas around the entrance of the ducts into the duodenum. It was considered that a resection of it was possible.

Procedure.—The duodenum was mobilized from the posterior abdominal wall and the head of the pancreas exposed from behind, where a firm irregular mass the size of an almond was present around the opening of the ducts. The stomach was divided above the pyloric antrum. The common bile duct was ligated with stout thread and sewn over, and the duodenum was mobilized to 1 in. (2.5 cm.) beyond the duodeno-jejunal flexure. The pancreas was divided at the junction of its distal and middle thirds; its duct was found to be distended to a size rather larger than that of the ureter. The first 6 in. (15 cm.) of the jejunum was easily drawn up through the mesocolon, which was closed snugly round it. The neck of the gall-bladder was anastomosed to the distal end of the jejunum. The end of the pancreatic duct was anastomosed to the side of the jejunum about 2 in. (5 cm.) distal to the first anastomosis, where the two were easily approximated. The end of the stomach was anastomosed to the side of the jejunum, immediately below the pancreas. A soft rubber drain was passed to these anastomoses and the wound was closed.

Examination of sections of the hard mass around the common bile duct confirmed the clinical diagnosis of carcinoma of the head of the pancreas. The tumour was infiltrated by large anaplastic epithelial cells with pronounced hyperchromatosis and mitosis. Differentiation to glandular structure was seen in parts of the growth. Extensive lymphoid-cell infiltration was also present.

On January 16, 1948, the patient weighed 9 st. 3 lb. (58.51 kg.)—an increase of 5 lb. (2.27 kg.). By February 13 he was again jaundiced, and a recurrence was palpable in the scar of the abdominal incision. He died in April of asthenia.

Comment.—In this case the common bile duct was so large that its anastomosis to the jejunum would have been practicable, and I think this would have been a sounder operation. The patient had been jaundiced for four months when he was first seen, and I make a plea that in cases in which painless jaundice has been present for a month the possibility of carcinoma of the pancreas should be considered and a surgical opinion sought. The mortality of laparotomy is probably 1 to 2%; that following observation of carcinoma of the bile ducts or pancreas is 100%. Some 80% of the patients will recover after resection of the pancreas.

Case 2

A married woman aged 43 was first seen in September, 1948, when she complained of a symptomless lump in the right side of the abdomen, which she had first noted two and a half years before but which had enlarged in the last seven weeks. She had some flatulence and nausea, but no pain or vomiting. Recently her appetite had been poor. She weighed 7 st. 6 lb. (47.17 kg.), but her weight had never been more than 8 st. (50.8 kg.).

On examination a tense cystic, smooth globular swelling the size of a child's head was found on the right side of the abdomen (Fig. 1a). The tumour was movable from left to right but not up and down; on pressure it flattened into the loin, but reappeared on coughing; it did not move on respiration. The liver, gall-bladder, kidneys, and spleen could not be felt. On rectal examination the pelvis was found to be clear. Provisionally the diagnosis rested between (1) mobile retroperitoneal sarcoma in the area of the pancreas, duodenum, and transverse mesocolon; (2) an atypical carcinoma of the pancreas; and (3) an atypical pelvic tumour rising into the abdomen.

FIG. 1.—Case 2 (a) The site of the tumour. (b) The tumour as presenting at operation.

Examination of the blood showed: haemoglobin, 42%; red blood cells, 2,600,000 per c.mm.; leucocytes, 10,300 per c.mm. (polymorphonuclears 84%, lymphocytes 16%); blood urea concentration, 34%. A catheter specimen of urine yielded a negative quantitative result, both regarding the deposit and on culture.

Operation.—On October 12 an extended right paramedian incision was made under thiopentone and open ether anaesthesia (Dr. Badock), supplemented by local infiltration of the abdominal wall and splanchnic ganglia with 1 in 1,000 amethocaine hydrochloride. A large vascular, apparently cystic tumour somewhat smaller than an adult head was found lying within the curvature of the duodenum, which was stretched like a strap over it superiorly and laterally. It was adherent to the stomach, duodenum, pancreas, ascending colon, and transverse colon, and bulged through the stretched right mesocolon. The gall-bladder and liver were normal. The swelling was aspirated, but nothing was withdrawn (Fig. 1b).

Procedure.—An attempt to shell out the swelling through the mesocolon was abandoned because of copious bleeding and because no plane of cleavage was found. At this stage it was decided that the tumour arose from the pancreas and that its excision was possible and necessary. The colon and duodenum were mobilized from the flank into the wound and the tumour was brought forward with the duodenum stretched tightly over it. The common bile duct and the gastro-duodenal artery were divided between ligatures. The stomach was sectioned above the pyloric antrum. The duodenum was mobilized to the first inch of the jejunum, where it was incised. The mass was brought out of the abdomen attached to the descending and transverse colon and the pancreas; the latter was cut at the junction of the left and middle thirds, well removed from the swelling (Fig. 2). The tumour was so intimately associated with the right colic artery and mesocolon that there was danger, if they were separated, of disseminating the growth and of imperilling the blood supply of the colon; therefore the ileum was sectioned and the transverse colon was transected at its middle. The tumour, with the pyloric antrum, the duodenum and first inch of the jejunum, the last 6 in. (15 cm.) of the ileum, the caecum, ascending colon, hepatic flexure, and right half of the transverse colon, was removed.

FIG. 2.—Case 2. Showing the parts after excision.

The Reconstruction.—The

first 6 in. of the jejunum was drawn through the transverse mesocolon, and the opening in the latter was closed and sutured to it (Fig. 3). The common bile duct was anastomosed to the centre of the end of the jejunum; as it was not dilated, this was difficult. (In dealing with a similar case in future I intend to use the gall-bladder instead.) The pancreatic duct was not dilated, and was considered too small to connect to the jejunal mucous membrane. The end of the pancreas was oversewn and the stump was implanted into the side of the jejunum, the sero-muscular wall being incised to receive it. The stomach was anastomosed end to side to the jejunum. The ileum was united end to end to the transverse colon. This last step constituted a weak link in the chain, but, thanks to the use of penicillin and "sulphatriad" (sulphathiazole, sulphadiazine, and sulphamerazine), combined with plasma and blood transfusion, all was well. The abdomen was closed with nylon sutures, and drainage-tubes were inserted to the anastomoses.

FIG. 3.—Case 2. Showing the reconstruction.

The patient was given infusions of salt, sugar, and water, and transfusions of plasma and blood, under the direction of Dr. Sterndale Bennett. The post-operative course was uneventful, except for a small discharge of bile for six days, beginning on the fifth day.

Pathological Report (Dr. Cuthbert Dukes).—The specimen consisted of a large oval tumour measuring 5 by 4 in. (12.5 by 10 cm.) and occupying the region of the pancreas. The growth was surrounded by the duodenum, all of which was removed with the operation specimen. The caecum and a portion of the transverse colon were also removed. Microscopical examination showed the tumour to be composed of fusiform epithelial cells arranged in small clumps and distributed irregularly. The histological appearances were those of an anaplastic carcinoma of the body or the tail end of the pancreas. Judged from its histology the growth was probably of a high grade of malignancy.

The following post-operative results of tests of blood, urine, and faeces were obtained by Dr. John Spencer.

The following post-operative results of tests of blood, urine, and faeces were obtained by Dr. John Spencer.

October 18.—Catheter specimen of urine: occasional red blood cells in deposit; culture demonstrated presence of coliform organisms; total chlorides, 6 g. per litre. Blood: haemoglobin, 85%; red cells, 4,350,000 per c.mm.; blood urea, 35 mg. per 100 ml.; plasma proteins, 7.5 g. per 100 ml.

October 19.—Blood: haemoglobin, 90%; red cells, 4,820,000 per c.mm., blood urea, 24 mg. per 100 ml.; resting blood sugar, 160 mg. per 100 ml.

November 5.—Fasting blood sugar, 120 mg. per 100 ml. Thirty minutes after the administration of 50 g. of glucose the blood sugar was 120 mg. per 100 ml., one hour after the glucose was given the reading was 121 mg., and within another 30 minutes the level had fallen to 100 mg. per 100 ml. No sugar was found in the urine. Examination of the faeces gave the following percentage figures: total fat, 7.32; unsplit neutral fat 1.52; split fat 5.8. It was concluded that the fat-splitting mechanism was functioning adequately.

May 30, 1949.—Blood, normal; blood sugar, normal; faeces, fat-splitting mechanism normal; urine, normal. The patient was well in all respects and maintaining her weight and strength.

In December, 1949, the patient was well and was doing her work as a housewife without sign of recurrence.

Comment.—The magnitude of this operation was increased by the resection of the ascending and the transverse colon—a procedure which seems not to have been called for hitherto, as no record of such a step has been found in the literature.

I gladly acknowledge my indebtedness to Drs. Sterndale Bennett, Bentley, and John Spencer (of the King George Hospital, Ilford) for their help with this patient.

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Medical Memoranda

Hernia through Foramen of Winslow

The following case was complicated by the fact that the herniated loop had re-entered the general peritoneal cavity through the lesser omentum.

CASE REPORT

A woman aged 41 was admitted to hospital complaining of severe abdominal pain which had come on some 20 hours previously. The onset had been sudden, and the pain had increased in severity, especially in the upper abdomen. Some seven hours after the onset she had vomited, and this had recurred about six times since. The bowels had not moved, nor had she passed flatus since the pain started. She had no other symptoms and the last menstrual period had been two weeks before. On specific interrogation she admitted to a vague type of indigestion which "came on before supper if I had a fatty dinner." The previous history was otherwise entirely negative.

Examination showed her to be a well-nourished woman, and in obvious pain. Her temperature was normal. There was a fine whitish fur on the tongue, and the breath was slightly fetid. The abdomen did not move on respiration, and tenderness and guarding were present all over, but more pronounced in the epigastrium. There was loss of liver dullness in front but not in the axillary line. Rectal examination revealed a rather bulky uterus but no other abnormality. No abnormal signs were found in the other systems except rather frequent extrasystoles. The pulse rate was 92 and the blood pressure 135/85. As she did not vomit after admission the character of the vomitus was not ascertained.

A tentative diagnosis of perforated peptic ulcer was made and a laparotomy performed. In all fairness to those who saw the patient I must record that this diagnosis was made with some trepidation. There were many features which did not fit in—e.g., the ingravescence nature of the pain and the absence of frank rigidity. It was also difficult to reconcile a perforation of 20 hours' duration with her extremely good general condition.

Operation.—Under general anaesthesia a high right paramedian incision was made. On opening the peritoneum the first

significant finding was the absence of free fluid; next, the caecum presented in the upper part of the wound, grossly dilated and overlying the liver. This must have been the cause of the loss of liver dullness noted clinically. The findings at laparotomy are shown in Fig. 1. At first this was thought to be a case of volvulus of an abnormally mobile right colon, but on tracing the loop to its base under cover of the liver a fold of peritoneum was found under which the loop had passed. It then seemed that we were dealing with an obstruction by a peritoneal band, and the obvious treatment would be to divide it and thus free the imprisoned gut (Fig. 2).

FIG. 2.—Diagram of findings after the liver had been turned up. The band of peritoneum shown crossing the base of the loop was the right "free edge" of the lesser omentum.

The true diagnosis was not evident until palpation of the fold revealed forcible pulsation and investigation proved that it contained the hepatic artery, common bile duct, and portal vein, and that it was in fact the right "free edge" of the lesser omentum. The loop of gut had entered the lesser sac through the foramen of Winslow and traversed the gastro-hepatic omentum to reappear in the general peritoneal cavity between the liver and the lesser curve of the stomach.

It was impossible to reduce the hernia by traction, as the loop was so distended and the hiatus so small. Enterotomy was also in vain, and it was decided to resect the offending loop. This was considered feasible in view of the excellent condition of the patient under the anaesthetic; also, the length of mesentery was such as to render the procedure relatively simple. Resection of the loop was accordingly effected and an ileo-transverse colostomy performed. It was then considered that the patient had had as much manipulation as was desirable and no attempt was made to define the precise peritoneal anomalies or to close the gap between the liver and the stomach.

Apart from some infection of the base of the right lung convalescence was uninterrupted and the patient was discharged well three weeks later.

I am grateful to Mr. J. F. Heslop for permission to publish details of the case. Thanks are also due to Dr. S. Kay for the drawings, and to Mr. C. I. Raeburn for his invaluable assistance in the preparation of the report.

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Treatment of Megaloblastic Anaemia with Vitamin B₁₂

In view of the interest aroused by the recent isolation of vitamin B₁₂ simultaneously by Lester Smith (1948, 1949) in Britain and Rickes *et al.* (1948) in the U.S.A., and its action in megaloblastic anaemias (Ungley, 1949), we feel that it would be of interest to record our experience of this substance in the treatment of two cases of pernicious anaemia which were recently under our observation. The amount of substance available to us did not permit treatment to be completed and continued, but a satisfactory and unequivocal initial response was obtained in both cases.

FIG. 1.—Diagram of findings at laparotomy. Terminal ileum, caecum, ascending colon, and part of transverse colon were lying superficially, forming a loop the base of which disappeared under the liver margin.