gnosis of perforation. Here we have pain, sickness and faintness, with slowly extending tenderness and distension, but all these conditions are much less marked in the early stage than they are in the first group, though they may at the end of two or three days develop rapidly, and end the patient's life in a few hours. Here there is a smaller leakage which becomes more or less encysted by adhesions, and which may eventually form a well-defined abscess, perforating into the intestine, or on to the surface of the abdomen, or into the thorax²; or some accidental exertion, such as that of vomiting, may rupture the collection into the general peritoneal cavity, and set up a rapidly fatal diffuse peritonitis. In this second group, ill-marked as the symptoms are as compared with those in group one, yet with a history of symptoms of gastric ulcer they would generally call for an exploratory incision.

NOTES OF A CASE OF GASTRO-ENTEROSTOMY FOR PYLORIC TUMOUR, WITH GRADUAL DISAPPEARANCE OF THE TUMOUR AFTER OPERATION.¹

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A. H., age 38, was placed under my care by Dr. Crawford, with a history that she had suffered for some months from vomiting at intervals, great emaciation, constipation, and that he had detected a small tumour in the abdomen.

Since March she had been unable to take solid food without suffering from vomiting, which occurred from time to time, and she frequently noticed that she vomited at night what she had eaten in the morning. When taking milk alone she was able to prevent the vomiting for some days, but was more comfortable when she took no food of any kind. A distinct tumour was felt below the normal site of the pylorus. The stomach showed increased area of percussion, and well-marked splashing was made out.

I advised that the abdomen should be opened, the tumour examined, and removed if possible, and that the stomach should be united to the jejunum in order that the obstruction might be relieved. She was admitted to the Blythswood Nursing Institution in Glasgow on November 14th, 1891. She was fed for two days on small quantities of milk and barley water along with meat suppositories, which latter agreed with her. As she was very weak, I did not wash out her stomach previous to operation.

November 16th. Ether was given by Dr. Garnet Wilson, and assisted by Drs. Beaton and Bryce—there being also present Drs. Crawford and Sloan—I opened the abdomen, making an incision slightly to the left of the umbilicus. The stomach was found dilated, and the tumour was easily lifted upwards; it was the size of an orange, but slightly more flattened, and was quite free from adhesions, but had the look of a malignant growth.

As the patient was very feeble it was decided not to interfere with the tumour, so I made an incision $\frac{1}{2}$ inch in length at the pyloric and inferior aspect of the stomach, and, passing my finger in, I examined the constriction, and found, as we expected, that it was not due to contraction after ulceration, but caused by thickening at the pyloric orifice, which would barely admit my little finger. Loret's operation of dilatation could not, therefore, be practised, so I proceeded to join the stomach to the jejunum, making use of Senn's decalcified bone plates. Having first washed out the stomach, the wound was enlarged to $1\frac{1}{2}$ inch, and a bone plate threaded with chromicised catgut ligatures, as advised by Mr. Jessett, introduced. The ligatures, four in number, were passed, two through the coats of the stomach laterally, the other two were brought out at the upper and lower angles of the wound. A portion of jejunum was then selected which could be brought easily in contact with the stomach; the bowel was emptied of its contents, two of Makin's clamps applied with $\frac{3}{4}$ inches of bowel between them; the bowel was opened by an incision $1\frac{1}{2}$ inch in length, and a bone plate introduced and fastened as above described. The two openings were now brought in contact and the ligatures tied, a Lembert stitch being used at each end to steady the plates; the stomach and bowel were then dropped into the abdomen and the incision closed with Barker's silk. The usual dressings having been applied, the patient was lifted back to bed.

She made a perfectly good recovery, and in three weeks after the operation was taking solid food, and now—eight months after—she is looking healthy and well nourished. She is doing the usual work of a house, and recently has had extra strain owing to illness in her family, but she says she feels perfectly well and has no discomfort anywhere, and has never vomited since the operation was performed. On examination it is not now possible to make out any tumour—which may partly be due to the fact that she is so much fatter.

As gastro-enterostomy is a comparatively recent operation, I thought it might be an advantage to record this case.

Joining the stomach to bowel is evidently the natural operation to do, as Professor Gairdner drew my attention to a plate in an old pathological atlas which shows distinctly the union of the stomach and bowel in a case of ulceration with obstruction.

It may seem almost a matter for regret that the tumour was not removed, but doing so adds greatly to the risk, as there are then four wounds to heal instead of two, and the length of the operation is greater. I felt that the patient whose case I have detailed was so weak that removing the tumour would have been fatal, and I knew that if she recovered from the minor operation and the tumour gave trouble, I could reopen the abdomen and remove it.

The operation has given the tumour rest, and if it is malignant it is quiescent; if it is a fibrous enlargement it has subsided. Fibroid growths at the pylorus are not quite so uncommon as used to be supposed, and a careful examination of the abdomen should be made in all cases of indigestion, more especially when there is vomiting. The method of joining the stomach and intestine by Senn's plates is quicker than stitching the openings together, and is quite as satisfactory. Two preparations, which my friends Professor Chiene, of Edinburgh, and Dr. Beaton, of Glasgow, have kindly lent me, both show complete union of the stomach and intestine in cases of gastro-enterostomy operated on by them, the one by Professor Chiene having been united by stitching, that by Dr. Beaton by Senn's plates. The use of india-rubber rings has also been advised, and in cases where intestine has to be joined to intestine Mr. Jessett, to whom we are greatly indebted for our knowledge of intestinal surgery, has used these rings with perfect success. As the rings are not absorbed, he points out the importance of not using them in cases of stricture, as they might cause trouble by not passing.

The after-treatment of patients who have had this operation performed is most important; feeding by the mouth in small quantity should be commenced two hours after the operation, aided by meat suppositories, the quantity being gradually increased as the patient's strength returns.

The points of importance to consider are: 1. Is the operation one to be advised, and when should it be performed? 2. Should the tumour have been removed? 3. Are Senn's plates the best means of effecting union between the stomach and bowel?

CASE OF PERFORATING GASTRIC ULCER: PERITONITIS: RECOVERY.

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CASES of recovery after peritonitis, due to perforating gastric ulcer, seem to be rare. I have been able to find records of only six cases. Three of these¹ are recorded as having completely recovered, while three² died in the course of subsequent attacks, and the accuracy of the original diagnosis was verified by *post-mortem* examination. In the following case recovery has, happily, been so far complete; and clinical facts alone can be offered in justification of the diagnosis:—

On February 1st, 1891, while I was doing duty for my friend, Dr. Waterhouse, one of his patients called me to see her nursemaid, who had become suddenly very ill. On my arrival I found a well-built young woman reclining on an elbow-chair, and apparently in a dying condition. I learned that, five years previously, patient had had hæmatemesis; that she then was treated for gastric ulcer as an in-patient at St. Mary's Hospital; that she had come out sooner than her friends expected; that she had had stomach troubles ever since, with occasional exacerbations of pain at a fixed point in the epigastrium. Of late, but for the epigastric pain, she had been unusually well. She had had a normal menstrual period a fortnight previously. On the morning in question she had breakfasted at 9 A.M.; she had passed water naturally at 11.30 A.M.; all the morning she had been unusually busy. Finally, at 1.15 P.M., while at house-work, she had been seized with sudden acute pain in the epigastrium accompanied by faintness and paleness, but no retching.

At 2.40 P.M., when I first saw her, the patient was of a ghastly pallor; the radial pulse was about 60, but almost imperceptible; temperature

¹ See an interesting paper by Taylor, *Birmingham Medical Review*, April, 1883.

² Read in the Surgical Section at the British Medical Association meeting at Bournemouth.

¹ Redwood, *Lancet*, vol. i, 1870, p. 647; Ross, *ibid.*, vol. i, 1871, p. 81; Tinley, *ibid.*, vol. i, 1871, p. 533.

² Fraser (2 cases), *Ranking's Abstract*, vol. i, 1861, p. 95; Hughes, quoted in Hilton Fagge, vol. ii, p. 472.

under the tongue 96°; she complained of giddiness and of pain in the epigastrium just to the left of the middle line. The abdomen below the umbilicus was swollen and rounded; there was tenderness on pressure in the epigastrium; on percussion, the lower limit of liver dullness was well above the costal margin. Heart and lungs seemed normal.

Putting the history and the clinical signs together, I concluded that this was a case of latent gastric ulcer which had suddenly perforated into the peritoneal cavity. Further, the girl seemed so anæmic and so nearly dead, that I thought there must be internal hæmorrhage as well. She was put to bed, a hot bottle was put to her feet, turpentine fomentations were applied to the abdomen, she was given brandy 3ss in 3ss of water, and the following draught—R Nephenthe mx. ext. erg. liq. mxx. tr. hamamelidis mv. aq. chlor. ad. 3ss. To prepare the way for rectal alimentation, a large gruel enema was given twice but without result.

At 6 P.M., five hours after the onset, I saw the patient again. She had retched once, and she had had a slight rigor. She lay slightly on her left side, and she referred the pain to the left side of the thorax. Her pulse was 72, and fuller than before; temperature 98.4°, face flushed, abdomen evenly distended, tender to palpation, and very resonant. Now that the rectum was known to be clear, food and medicine by the mouth were stopped, and the following enema was given every four hours—R Tr. opii mx, brandy 3ss, beef-tea 3j.

At 9.15 P.M., eight hours after the onset, the patient looked paler; she lay upon her back with her knees drawn up; respiration was altogether thoracic. She complained of pain in the left shoulder; the pulse was 80 and fairly full, temperature was 99.2°; the abdomen was much more full, more tense, and more resonant. On percussion, no liver dullness was to be found.

About midnight Sir Wm. Mac Cormac kindly saw the patient in consultation. He agreed that there was peritonitis, that this was probably due to perforating gastric ulcer, but he decided that the girl was too far gone to be able to bear any operation; so the treatment of expectancy with opium and nutriment by the rectum was continued, and a trained nurse was obtained.

Next day, February 2nd, at 10 A.M., the patient still lay on her back with her knees drawn up. There was a malar flush; the face had a pinched, drawn look; the pupils were small, the patient was drowsy, and though pain had been severe early in the morning it was now absent. The pulse was 100, smaller, and harder; the temperature 100.4°, the respirations 36; the tongue was dry, flatus had been passed by mouth and anus. After slight retching patient had brought up some mucus in which were small, red shreds, and some larger, soft, white nodules of doubtful nature. The abdominal physical signs were exactly the same as on the previous night. Treatment was continued, and, in addition, small bits of ice were allowed to be sucked.

At 6 P.M. the pulse was 104, smaller, and feebler; temperature 100°, respirations 28, physical signs unchanged.

At 10 A.M. on the morning of the third day, patient was lying in the same drowsy condition; pulse was 100 and small, temperature 99.4°, respirations 28. The physical signs remained unchanged, and in this condition I handed the patient over to Dr. Waterhouse, who returned to town on that day. My notes of the case cease here, but I heard from Dr. Waterhouse that the same treatment was continued, that gradually the slight pyrexia abated, the distension and hyper-resonance of the abdomen diminished, the liver dullness reappeared—in fact, there was a progressive but slow improvement. Finally, after a sojourn at the seaside, the girl was able to resume her duties as nursemaid, and she is now in excellent health.

Austin Flint³ has laid stress on complete disappearance of the liver dullness as a sure sign of free gas in the peritoneal cavity, and therefore of perforation. It is true that this sign may also be due to the interposition of a piece of distended intestine between the liver and the diaphragm, or to the coincidence of pulmonary emphysema with increased intra-abdominal pressure.⁴ But, in the case above narrated, the latter condition was certainly not present, and the former was negatived by the sequence of signs and symptoms.

The happy issue of the case is to be attributed partly to the exceptionally favourable surroundings, and partly to the fact that at the time of perforation, four hours after a meal, the stomach must have been practically empty. It is instructive that, of the six quoted cases of recovery, Ross's case had had no food for twelve hours before perforation; Tinley's none for about four hours before perforation; while in Hughes's case the patient had had only a little gruel four hours before the sudden onset of the attack. Moreover, in the other three cases the narratives suggest that the stomach probably was empty. Further, in five of these cases it is stated that during treatment feeding by the mouth was rigorously limited.

It seems to be a fair inference from these facts that, when perforation has occurred while the stomach is empty, one gives the patient the best chance by keeping the stomach empty, administering opium and nutriment by the rectum, and ensuring complete rest. On the other hand, when perforation of a presumably full stomach has occurred, laparotomy affords probably the only chance.

³ *Medical News*, February 11th, 1882.

⁴ Graham Brown, *Medical Diagnosis*, 2nd ed., p. 70.

A MODIFICATION OF THE OPERATION OF INGUINAL COLOTOMY AND ENTEROSTOMY.

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WHILST performing enterostomy about five years ago in a case of acute intestinal obstruction, it occurred to me that if I punctured the bowel already stitched to the side with a large trocar and cannula, and then fixed a tube on the cannula, I should be able to run off the liquid fæces into an antiseptic

(a) A large cannula oval on transverse section with two openings at the side, one to allow the passage of the fæces if the end of the cannula happens to reach the other side of the bowel; the other higher and projecting from the side in order to allow a tube to be fixed on it to convey the fæces away from the bowel. The end of the cannula within the bowel is rounded off so as to avoid a sharp end. The distal end has a short india-rubber tube fixed in it, which embraces the trocar, and which is securely closed with a ligature, which is tightened as the trocar is withdrawn.

(b) The cannula with its elastic tubes fixed, the upper one closed by a ligature.

(c) The trocar, with a lancet-shaped end, which incises the bowel, and does not make a jagged wound, thus rendering it easy to close the aperture if the time comes that such an operation is required. In the diagram the cannula is on the trocar. The instrument has been made for me by Messrs. Wood, of York, and Mr. Rauschke, of Leeds.

solution placed by the side of the patient, and so prevent fouling of the peritoneum or wound.

After twice successfully employing this method, I adopted

SALE OF ANTIPYRIN.—By a new regulation of January 1st, antipyrin may no longer be sold without a medical prescription.