FOUR CASES OF GASTRO-ENTEROSTOMY FOR PYLORIC CANCER.

By ARTHUR E. BARKER, F.R.C.S.,

Professor of the Principles and Practice of Surgery, and Professor of
Clinical Surgery at University College; and Surgeon to
University College Hospital.

WE are so much in need in this country of completed series of the various operations on the stomach to enable us to judge of the proper cases in which to perform them, and to estimate their risks—that I venture to give a brief account of my last four cases of gastro-enterostomy, which, with two previously recorded, complete my experience of this operation. The records of the cases before me are very full and complete, but I trust I shall not omit anything essential in the abstract which follows:

CASE III.—A lady, aged 43, extremely emaciated and anæmic when I first saw her on October 28th, 1892. Her medical attendant, Dr. Preston, of Canterbury, had already, after a very careful examination of her symptoms, and an analysis of the vomited matters, and the discovery of a tumour of the pylorus, come to the conclusion that she was suffering from carcinoma ventriculi, with distinct symptoms for at least six months—a view which I had only to confirm. As the lady was suffering great pain and distress from pyloric obstruction and dilatation of the stomach, it was decided to give her relief if possible by gastro-enterostomy. This operation I performed on October 29th, 1892. Her room and all surroundings had been previously arranged in the most complete manner by Dr. Preston, leaving very little chance of anything being overlooked which could contribute to the success of the procedure. The method adopted was precisely the same as in my first case, published in the *BRITISH MEDICAL JOURNAL* of 1886, where I practised a method of suture original with myself, which has since been frequently employed by others, but not always acknowledged. The operation (anterior gastro-enterostomy) was not specially difficult, and was completed in 1 hour and 43 minutes. The patient recovered fairly from the operation, but 12 hours later became very weak, and gradually sank from exhaustion, dying just 24 hours after the completion of the operation. There was, I believe, no *post-mortem* examination.

CASE IV.—J. C., aged 39, was admitted into Dr. Ringer's ward at University College Hospital on October 17th, 1895, complaining of general wasting and loss of appetite. He dated his trouble from the previous August. It began quite gradually with wasting and loss of appetite; vomiting followed, and continued daily for the last month, with constant nausea and burning pain after food. Bowels confined; motions small and very white. There was on admission a small tumour to be felt to the right of and a little below the umbilicus which was slightly tender. There was considerable dilatation of the stomach. Sarcinæ were discovered in the vomited matters. While in hospital there was very rapid loss of weight. The diagnosis of pyloric growth with stenosis having been made, with very rapid and extreme emaciation, it was felt that the only prospect of relief was to be looked for in a gastro-enterostomy. This I performed in the usual way, but employing a Murphy's button, on November 4th, 1895. There was no difficulty either in deciding as to the course to be pursued or in the operation. The pyloric growth was far advanced, and there were numerous secondary deposits in the glands. I therefore united the anterior wall of the stomach with the jejunum at the usual spots with the button, and closed the abdomen. Two days later the patient died quietly of asthenia.

Post-mortem Examination.—Everything in the abdomen was found satisfactory. The button lay well in position, pressing a little on the colon.

CASE V.—E. C., a nurse, aged 47, was transferred to my charge through the kindness of my colleague, Dr. Roberts, under whose care she had been admitted into University College Hospital on October 4th, 1897. Her symptoms then were pain in the stomach after meals, constipation, and vomiting. She had had symptoms of indigestion for the past seven years, the constipation alternating of late with diarrhoea, the motions being often of a dark colour. Had never noticed blood in the vomited matter. A lump in the epigastrium was noticed eighteen months ago. The patient's mother had died of cancer of the rectum. There was considerable dilatation of the stomach.

No difficulty in diagnosis was experienced, namely, cancer of the pylorus with stenosis and dilatation of the stomach. The washings of the stomach on several occasions sometimes showed the presence of hydrochloric acid and sometimes none as tested by Gunsberg's phloroglucin vanillin reagent. No sarcinæ present, but diplococci were found in abundance, which in appearance and behaviour to stains were indistinguishable from the organism of pneumonia.

As the patient's general strength appeared fair, and she was very anxious for relief from the distress due to the tumour and the pyloric stenosis, I performed an anterior gastro-enterostomy on November 4th, 1897, with considerable hope that I should be in time to give her relief and prolong her life. The operation was done precisely as in Cases I and III, my own method of suture being employed in preference to the use of any of the many buttons or plates now in use. Continuous sutures were employed to unite the viscera. There was no difficulty throughout the operation, which was completed within fifty-five minutes. The tumour proved to be a pyloric cancer, with invasion of the glands.

There was some shock afterwards, but this was relieved by enemata of hot water and brandy. After this there was a steady improvement, the patient being soon easy and cheerful, and taking an ever-increasing amount of fluid food, which was digested fairly well, and produced normal stools. On November 23rd—that is, at the end of the third week—the patient had a rigor (temperature 103° F.), the cause of which could not be determined. On November 25th there was again a rigor. On November 26th the patient vomited about 15 ounces of blood clot and became very weak, and the hæmatemesis continued in smaller quantities

until the next day, when she sank gradually, and died on the twenty-fourth day after operation.

At the necropsy made by Mr. Bolton perfect primary union of the abdominal incision was found. The peritoneal cavity was healthy in every respect. The anastomosis between stomach and jejunum was in the right place, and was perfect as regards suture and union. There was no kinking or distension anywhere in the bowels. On opening the stomach, which had completely recovered from its dilatation (indicating that the new opening had worked regularly and well), the diagnosis of cancer of the pylorus was confirmed. The growth was very hard and annular, and ulcerated on the surface, but evidently had not furnished the blood vomited. Examining further, a small scar of a simple ulcer the size of a sixpence was found about 2 inches from the pylorus near the smaller curvature. A smaller ulcer, fresh and with sharp-cut edges, was found on the anterior wall about midway between the curves and 2 inches from the artificial opening. "At the base of this ulcer was a punched-out opening into an artery filled with recent clot which projected over the surface. This opening, which was obviously the source of the fatal bleeding, admitted a fair-sized knitting needle. The walls of the stomach were thin, and the mucous coat atrophied. The rest of the intestinal tract was normal, but stained by the altered blood from the stomach." The previous discovery of multitudes of diplococci in the stomach is especially interesting taken with the presence of a recent sharp-cut ulcer.

CASE VI.—H. P., aged 40, was transferred to my care at University College Hospital by my colleague Dr. Roberts, whose diagnosis during the month she had been under his care pointed to carcinoma of the stomach. There was at the time of admission pain in the epigastrium associated with a tumour and with vomiting and wasting. These symptoms had begun two years before, but had been aggravated for the past seven months, during which the vomit was often "like coffee grounds," but never showed pure blood. Emaciation was extreme, and there were dark hollows under the eyes. There was little or no evidence of dilatation of the stomach. The tumour in the epigastrium was about the size of a small egg. No free hydrochloric acid was found in several washings of the stomach.

The patient being very anxious for some operation which should relieve her pain and vomiting, and there being a fair prospect of giving this by gastro-enterostomy, I performed this operation on November 4th, 1897, together with the previous case. The tumour proved to be a carcinoma of the pylorus with extensive invasion of the adjacent glands. There was no difficulty in the procedure, which was carried out by continuous suture exactly as in the previous case, and which lasted under 50 minutes. A gland was removed for examination, and showed advanced carcinoma. The recovery after operation was most satisfactory, the patient being most cheerful, and soon enjoying a fairly abundant liquid diet. The bowels moved naturally. At the end of the second week she was able to take meat and milk puddings, and expressed herself as better than she had been for nine months. On November 18th she had a rise of temperature to 101.8°, and the next day to 104.6°, with collapse, and she died in the evening on the fifteenth day after operation.

At the necropsy the abdominal wound was found to be perfect, as also the union of the stomach and jejunum. On opening the stomach, a large mass of cancer was found in the pylorus deeply ulcerated, and at the base of this ulcer was a large perforation leading into the sac of the omentum, sufficient to admit the whole of the index finger. There had not been time for general peritonitis to follow on the fatal perforation. The new opening in the stomach uniting it with the duodenum was perfect in every respect. But an interesting fact must be recorded here: On examining the coil of jejunum united to the stomach, I found that I had reversed the direction of the gut. The afferent part, which was about 18 inches from the duodenum, approached the stomach from right to left, the efferent passed from left to right. There was no evidence, however, that this had in any way produced any inconvenience by kinking or pressure, as the colon and the bowels had, besides, acted regularly since the operation.

In reviewing these four cases it is necessary to remark that they were all operated on too late. Cases III and IV died of the operation—the first of shock, the latter of inanition, perhaps aggravated a little by shock. The two last cases recovered thoroughly from the operation, the parts uniting perfectly, and leaving nothing to be desired as regards the functions of the new openings. But in Case V the stomach, injured by prolonged dilatation and putrescence of food with bacterial fermentation, was the seat of ulcers, one of which perforated an artery, causing fatal hæmorrhage. In Case VI, although the relief of symptoms after operation was most marked, the cancerous ulcer was too far gone in destructive change, and opened into the peritoneum just when we hoped the patient would be able to leave the hospital.

This last series, taken with two others already recorded, completes my experience of gastro-enterostomy. Case I lived for a year and a week, and grew fat and strong enough to resume domestic duties, dying ultimately of generalisation of the carcinoma. Case II left hospital improved, and walking about. Some time after he got an attack of pneumonia, and died. Through the kindness of the doctor in attendance I was enabled to secure the stomach, which showed an excellent anastomosis with the proper spot in the jejunum.

Out of six cases therefore I have had two deaths directly from the operation. In the four remaining cases the operation was successful, except that in the two last it was not done early enough to save the patients from perforation which must have been pending at the time, but which it is

fair to assume might have been altogether prevented or at any rate delayed by an earlier relief to the stomach.

In Case I I used my own method of suture; in II Senn's plates; in III, V, and VI my own method again, and in IV Murphy's button. As far as this experience, taken with other cases of intestinal surgery, justifies me in forming a conclusion I should certainly prefer simple suture with fine silk to any other contrivance. The time in my last cases spent over the operation was not excessive, and I had no fear in them of the button falling back to the stomach or jamming in the intestine.

The absence of free hydrochloric acid in the two last cases in most of the washings of the stomach strengthens the view generally held on this point.

This experience is on the whole not very cheering as regards gastro-enterostomy for advanced cancerous disease of the stomach, but as far as it goes appears to deserve to be recorded, and it strengthens the belief that if done early the operation can give relief.

THE TREATMENT OF ACUTE GENERAL PERITONITIS ORIGINATING IN THE VERMIFORM APPENDIX,

WITH ILLUSTRATIVE CASES.*

By EDWARD DEANESLY, M.D., B.Sc.LOND., F.R.C.S.ENG.,
Honorary Casualty Surgeon, Wolverhampton and Staffordshire General Hospital.

THE observations of surgeons and pathologists during the last ten years have conclusively proved that the various diseases recognised clinically under the names of typhilitis, perityphlitis, and certain forms of peritonitis all have their origin in certain morbid conditions of the vermiform appendix. According to the nature and degree of the primary lesion in the appendix and the nature and extent of the secondary results to which it gives rise, the clinical picture presents many varieties, the recognition and treatment of which have given rise to much discussion. Of these varieties the most severe and fatal is that in which disease of the appendix gives rise to acute general peritonitis, and the object of the present paper is to make a few remarks on the treatment of cases of this kind.

It was in these cases that *post-mortem* examination first clearly revealed the importance of the appendix as a pathological agent. As it was often found to be perforated by a foreign body or small faecal concretion, this was naturally regarded as the origin of the mischief. The exact part played by foreign bodies and concretions is even now by no means clear; but it is certain that general peritonitis may have its origin in an appendix which contains no solid body and in which no perforation exists; it is certain also that in all cases the peritonitis is due to the invasion of the peritoneal sac by micro-organisms derived from the interior of the appendix, whether they escape from it through an actual perforation or penetrate its intact but damaged wall.

With regard to the distinction between local and general peritonitis it is difficult logically to draw a hard and fast line, for even in the worst and most fatal cases the inflammation is hardly ever universal; but for practical purposes the case may be termed general when pus or septic fluid is found in the pelvic pouch, in both flanks, and among the small intestines as high as the navel, and when the inflammation is nowhere limited by firm adhesions. Such a condition, even when the upper part of the belly and the peritoneum covering the stomach, liver, and spleen is not obviously affected, is almost always fatal, and gives rise to a clinical picture quite distinct from that of a localised peritoneal abscess however large. Moreover it demands a different and much more energetic treatment.

Acute general peritonitis, thus defined, may arise in several ways, each way presenting somewhat different clinical history and symptoms. The first and most characteristic may be called the acute fulminating variety. Pathologically this consists of a very acute septic invasion, spreading with such rapidity that the greater part of the peritoneum is involved

in twenty-four or thirty-six hours, and in which the virulence of the micro-organism is so great, or the resistance of the tissues so feeble, that the inflammation is not limited by the formation of durable adhesions among the surrounding intestines. The absence of the power of resistance is also shown by the tardy formation of pus, for even on the third or fourth day the abdomen may be found to contain little pus, but an abundance of turbid stinking serum. Clinically this type of acute appendicitis presents a familiar picture, in which a quite sudden onset of acute abdominal pain, rapidly followed by vomiting, distension, constipation, and collapse with abdominal facies, form the chief features. If nothing is done death occurs with all the familiar features of general peritonitis from the seventh to the tenth day. The history and symptoms of such a case, together with the actual state of the appendix forty hours from the onset of the illness, are well illustrated by the following case, which occurred recently in my practice.

CASE I.—On the night of August 21st, 1897, a man, aged 30, went to bed feeling quite well. After a somewhat disturbed sleep he woke at 6 A.M. with a severe gnawing pain in the right iliac region of the abdomen. He took a little brandy, and a quarter of an hour later vomited. The pain continued during the day, and he vomited two or three times; the bowels also acted once. The pain having become more severe he took aperient pills and some salts, but vomited both back without effect. After this the stomach rejected everything soon after it was taken. About thirty-six hours after the first onset of pain I saw him in consultation with his medical attendant. He had then a typical abdominal facies, a quick, full pulse, a temperature of 101° , and a somewhat distended and rigid abdomen, with considerable tenderness, but no swelling in the region of the caecum. I had no hesitation in diagnosing acute appendicitis, and on opening the abdomen a few hours later found acute general peritonitis of the lower abdomen on both sides, with about a pint of turbid inodorous fluid with flakes of lymph. The appendix was swollen to the size of a man's forefinger, intensely injected, and its tip covered with recent lymph. After removal it was laid open and found to be filled tightly with dark recent blood clot adherent to a much swollen and injected mucous membrane. The operation was borne well, and the subsequent progress of the first four days appeared most satisfactory. Vomiting ceased, food was retained, the bowels acted, all distension and tenderness disappeared, and the normal respiratory movement of the abdomen was restored. The temperature, however, remained between 100° and 101° . On the fifth day he became maniacal, incessantly talking nonsense, and refusing food. These symptoms grew worse; he had no sleep, rapidly emaciated, and died exhausted on the eighth day without any return of abdominal symptoms. No *post-mortem* examination was permitted.

The above case is a good example of the acute fulminating variety. Another variety is that which follows the bursting of a localised abscess around the appendix by some mechanical cause, such as a blow or strain. In many cases there is a distinct history of this kind, and I have known a case in which the history and symptoms appeared to point clearly to rupture of the intestine, prove to be one of acute general peritonitis supervening on old quiescent mischief in the appendix. In the following case, although there is no history of a blow or strain, the fact that a localised swelling in the right iliac region was detected on the third day of the illness, and that on the following day the patient had a sudden attack of agonising pain followed by general collapse makes it probable that a localised abscess had suddenly burst into the general peritoneal cavity. The history is as follows:

CASE II.—On January 4th, 1897, a healthy boy of 14 felt poorly, and was given two aperient pills by his mother. The following day he was purged, and vomited, and complained of pain in the belly of sudden onset. On the third day the doctor in attendance found a swelling in the right iliac region. The next day, after a sudden agonising pain followed by collapse, a consultation was held, and a few hours later I opened the abdomen, and found a quart or more of turbid, semipurulent, very offensive fluid in the general abdominal cavity. There was acute general peritonitis on both sides as high as the navel. On separating some adhesions round the appendix a collection of more purulent fluid escaped. The appendix, which contained a concretion, but was not perforated, was removed, and the lad, after passing through a condition of prolonged and dangerous collapse, eventually made a good recovery.

There is one more variety of acute general peritonitis originating in the appendix. In this variety the onset is less acute and the early symptoms less severe. In fact, clinically it appears to be an ordinary case of what used to be called typhilitis. There is little pain, moderate fever, a tender swelling in the right iliac region, and constipation, but no vomiting after the first day; but the swelling, instead of gradually disappearing, or coming to the surface in the form of a localised abscess, becomes lost in increasing general distension, which begins in the lower part of the abdomen and then spreads upwards. These symptoms point to a gradual spreading of peritonitis beyond the area to which it was at first confined by intestinal adhesions. The general symptoms