SOME OBSERVATIONS ON PYLORIC STRICTURE.

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[Read in the Section of Surgery, November 13, 1904.]

I WISH to bring before the Surgical Section to-night some of my recent experiences in connection with the surgery of the stomach, and I shall endeavour to be as brief as the circumstances will allow me. The first case is one of the removal of the pylorus and nearly half of the stomach for malignant disease:—

The patient was a young woman, aged thirty-two, with the following history:—Some months before admission she had two attacks of jaundice with acute pain and vomiting, followed by progressive emaciation and debility. On admission she complained of pain in the right hypochondriac and epigastric regions, occasional vomiting, and great weakness. On examination a swelling the size of an orange could be felt behind the right rectus, about two inches below the right costal cartilages; it was movable from side to side, apparently swinging on a pedicle; not movable from above downwards, globular, fairly smooth and not tender to the touch. The stomach was not markedly dilated. She was extremely thin and fragile looking, weighing only 90 lbs.

Taking the history of attacks of acute jaundice into account, with pain and vomiting, I came, perhaps too hastily, to the conclusion that she was suffering from gall-bladder trouble, and decided to explore that region. Under anæsthesia, however, it was noticed that the tumour was nearer the middle line than it had appeared before, and that it was also movable from above downwards to an extent that precluded the possibility of its being a distended gall-bladder. I therefore made an incision in the middle line, and not through the right rectus, as I had intended. The incision promptly showed me that I had to deal with a pyloric tumour of some size. Careful examination showed that the tumour encroached upon a large area of the stomach,

that it had puckered up the great omentum in such a way as to bring the right end of the transverse colon in close apposition to it. It could, however, be moved freely in every direction, and, after the incision had been enlarged, was easily delivered through the wound. I confess that for a moment I shrank from the task of removing it; but, taking the wretched condition of the patient into consideration, the fact that if unrelieved she had but a short time to live, and the unusual mobility of the growth, I resolved to give her the chance, desperate though it seemed, of a complete removal, rather than the temporary relief of a gastro-enterostomy.

I should add here that my only assistant throughout the operation was my resident pupil, Mr. Parker, to whose skill and intelligence I am greatly indebted.

The removal of the growth was carried out on the following lines:—The duodenum at the junction of the first and second stages was clamped in two places, and divided between. To prevent leakage a short ligature was passed under the forceps and around the stomach end of the divided duodenum and tied as lightly as possible. The other end was encircled by a finer purse-string suture, the cut edges invaginated, and the ligature tightened as in an appendicectomy, thus converting the end of the duodenum into a *cul-de-sac*. The vessels along the upper curvature of the stomach were dissected out and secured, great care being taken to avoid injury to the gastric artery. The pyloric branch of the hepatic artery was tied down close to the tumour, and with the greatest caution the growth was raised from the neighbourhood of the bile-duct and portal vein. The next step was the separation of the transverse colon and omentum from the stomach. The latter was completely detached from the stomach and removed *en bloc*. Some glands close to the lower border of the stomach were removed with it. The complete removal of the great omentum gave great freedom to the subsequent manipulations. As I now proposed to divide the stomach at the point where its vertical diameter was greatest, and as I had no forceps sufficiently long to clamp it completely, I fixed one long forceps above and another below, and entrusting them to my assistant, I instructed him to keep them as much on the stretch as was consistent with safety, while I divided the stomach with the scissors on the distal side of the forceps from below upwards.

The other end of the stomach was simply encircled with a stout ligature to prevent any soiling of the peritoneum by leakage of stomach contents.

The stomach having been divided, the tumour area was wrapped in a sterilised towel and left for a few minutes. The wound in the stomach was now rapidly closed by a continuous suture passing through all the coats, the loops of the suture enveloping the large forceps used as clamps. As the suture was drawn taut these were withdrawn. In this way, without any leakage, the large wound in the stomach was temporarily closed, and this stage was completed by a row of Lembert sutures passing through serous and muscular coats, tucking in and completely covering the first row of sutures. The portion of the stomach now remaining was thus, like the duodenal end of intestine, made into a *cul-de-sac*.

The third stage of the operation consisted in dissecting the growth off the pancreas, bile-duct, portal and splenic veins. Separation from the vessels was easy, but the attachment to the pancreas was intimate, and separation from it resulted in leaving a raw surface of pancreatic tissue, which caused me some anxiety. One or two deep vessels coming from the sub-mesenteric, close to its origin, required ligature.

The last stage of the operation was the attachment of the posterior aspect of the stomach to the jejunum by a Murphy's button. In carrying out this posterior gastro-enterostomy, I departed from the usual procedure of penetrating the transverse meso-colon, and instead carried the small intestine in front of the colon. This was rendered easy by the previous complete removal of the great omentum, and saved some little time and trouble. The parietal wound was closed by a single row of silk-worm gut sutures, and the operation was complete, having lasted altogether two hours and ten minutes.

The patient was in a state of profound collapse after this long exposure and extensive resection, and vigorous measures were adopted for her resuscitation. Oxygen inhalation, hypodermic injection of strychnin, rectal injection of alcohol, and subcutaneous saline infusion were all employed. Notwithstanding all these, though faintly conscious, her pulse at 9 p.m. could not be felt. She was still deadly cold, and covered with a clammy sweat. To put it plainly, her condition seemed hopeless.

Strychnin was again injected in large quantities— $\frac{1}{10}$ grain

every hour for three hours; hot flannels were applied over her heart; subcutaneous transfusion was again resorted to, and her legs and arms were enveloped in cotton wool and flannel bandages. For thirty-six hours she lay in this moribund condition, and then gradually her own vitality won the day, and she began to gather strength. Her subsequent progress was uneventful, save for the occurrence of a small fistulous opening which made its appearance on the fourteenth day and closed after a few days with ordinary treatment.

The operation of pylorotomy, formerly regarded as a hopeless procedure, is now of fairly frequent occurrence. I need only recall to the notice of the Section the brilliantly-successful case recorded by our friend Mr. Gordon at the close of last session as proof of this assertion.

Had this been an ordinary case, therefore, of pylorotomy, I would not have brought it under your notice, but I think there are facts in the case that justify me in considering it as a little outside the usual run of such cases.

First was the eternal question of diagnosis. This case I originally believed to be one of distended gall-bladder, and it was not till the patient was under an anæsthetic and her muscles completely relaxed that I began to suspect the real nature of the swelling. Secondly, the extraordinary mobility of such a large growth is, in my opinion, quite unusual.

In the majority of cases of carcinoma of the stomach, long before the growth has attained a considerable size, extensive adhesions have formed in the neighbouring organs, and complete removal is out of the question. I do not think, therefore, that one is justified in deducing from the result in this particular case that removal of large growths in the pyloric area is likely to be a successful operation. Our hope of success must rest in an early diagnosis and operation.

The last feature of the case to which I would wish to

draw your attention was the method I adopted, differing, as it does, so completely from the method usually recommended and practised.

Till quite recently the mortality in pylorotomy was nearly 100 per cent., and this at the time when resection of portion of the colon, or small intestine, for malignant disease or local gangrene was carried out with a fair measure of success. Now, why should there be this great difference in the mortality of these two not very dissimilar operations? The answer is found, I believe, in the difficulty of making a perfectly tight joint between the stomach and duodenum by the ordinary end-to-end anastomosis, and this difficulty is due to several factors:—

First.—Owing to the great size of the opening in the stomach, as compared with that of the duodenum, it becomes necessary to first close the stomach opening in part, so as to approximate its calibre to that of the duodenum. When the duodenum is now attached to the stomach, part of the line of attachment must be along that area of the stomach which is carrying a double row of ligatures, and which has quite as much as it can do to repair its own wounded area without being called upon to supply the repairing material necessary for the junction with the duodenum. Apart altogether from the mechanical difficulty of making a close joint here, there is, I think, an excessive demand made upon the reparative forces of the peritoneum by this method.

Secondly.—When the pyloric tumour has been removed the pyloric branch of the hepatic artery must be divided. This artery is largely responsible for the nutrition of the first portion of the duodenum; therefore, when it is divided the duodenal end of the line of junction can do but little in supplying nutritive material to the uniting area.

Thirdly.—In endeavouring to approximate the stump of

the stomach to the duodenum considerable traction must be exercised, and the subsequent tension and tendency of the segments to separate is not likely to be favourable to a successful result.

Contrast this with the method I have outlined in my case. There is no difficulty whatever in completely and rapidly closing both viscera. The duodenum drops back without any tension whatever, and even should its own reparative powers be inadequate, the peritoneum of neighbouring organs pressing upon its end promptly supplies any deficiency. Similarly, the stomach opening can be rapidly closed without any tension, and without any undue demand on its reparative powers, and,

Lastly.—Prompt and absolutely secure anastomotic union can be established by means of a Murphy's button.

In this connection I should like to refer to the admirable discussion by Mr. Makin of the relative merits of end-to-end as compared with side-to-side anastomosis. This case was operated upon before I had read Mr. Makin's paper, but it is interesting to me to notice that I had, independently, as the result of my own experience, arrived at almost the same conclusions as this distinguished operator.

In my opinion, in the majority of intestinal resections side-to-side anastomosis is established more quickly, easily and safely than end-to-end anastomosis, and is, therefore, to be preferred. I feel convinced now that in an ordinary case of pyloric tumour of moderate size, with an appropriate equipment, the operation I have sketched out could be completed inside thirty minutes, and that its performance should be but little more hazardous than gastro-enterostomy.

Now, before concluding, if I am not too tedious, I should like to lay before the Section the result of my experience in gastro-enterostomy. Altogether I have performed up

to 51 operations of election on the stomach. Four of these were pyloroplasties for benign stricture of the pylorus, and one died—the first of the series. Forty-seven were gastro-enterostomies, without a single death.

I mention these results, not in a spirit of boasting, but in one of profound thankfulness. My assistants in these operations have been very varied indeed in their attainments and experience. I have the honour of being assisted by the great skill and experience of my friends Professor Conway Dwyer, Dr. Lentaigue, Dr. Lane Joynt, and my incomparable colleague, Mr. Robert Harvey; by my friends in the country, such as Dr. Rice, of Portarlinton; Dr. Coady, of Naas, and Dr. Sullivan, of Navan. Sometimes my assistants were limited to my own unqualified pupils resident at the hospital, such as Dr. O'Donnell Browne, Dr. Lilly Baker, Dr. Hanlon, and Miss Adderley, and in the serious operation I have detailed above my sole assistant throughout was my present resident pupil, Mr. Parker, who recently obtained, oddly enough, the Silver Medal in Medicine at the College examination. I mention these facts not, on the one hand, either to unduly enhance the value of the assistance I received from my experienced friends, nor to detract in any way from the help afforded by any of my younger, but often more obedient, colleagues, but rather to show that the operation is one of the safest, simplest, and most beneficial in the whole domain of abdominal surgery. The operation has been undertaken by me for the most varied conditions—for extensive carcinoma, for fibrous stricture of the pylorus, and lately for simple atonic dilatation causing anæmia and emaciation.

No one questions its value in pyloric carcinoma. Many surgeons consider that in fibrous stricture pyloroplasty is to be preferred, as being a nearer approximation to the normal condition, and a more logical procedure. Without

in any way disparaging the great suggestion of Mickulicz, or the value of logical deductions in general, I venture to assert that logical deductions must give way to the evidence of accumulated facts. Logic, as Falstaff says of honour, "has but small place in surgery," and no one who has an extensive experience of the two operations will long hesitate in deciding which of the two is safer for his patient, and which is likely to be productive of the best results.

I do not intend now to enter into a discussion of the relative merits of the button compared with the simple suture. I have tried both methods and been equally successful with both, but of late I have inclined more to the button, and the last fourteen cases have all been done with it. I should add, however, that I never limit myself to the button, but always use a certain number of sutures outside it—not to make the junction more secure, but to get as great a length as possible of jejunum in apposition with the stomach, and thus prevent the sharp knuckling at the point of union, which I believe to be responsible for the reflux of bile into the stomach which has in certain cases diminished or even destroyed the value of the operation.

I have never found it necessary to make either a second anastomosis between the segments of small bowel on each side of the button, or to carry out the much graver procedure of completely dividing the jejunum and then attaching the upper end of the main segment to the stomach, while the upper end of the smaller segment is implanted into the jejunum some four or five feet lower down.

The button has three great advantages over rival methods:—1st absolute security against leakage; 2nd, rapidity of application; 3rd, and most important, the patient can commence taking food as soon as the ether nausea has passed off. For these reasons I regard the

button as an essential item in abdominal surgery equipment.

In all my cases I have used the posterior route, and do not consider it necessary to advance any arguments in support of such an obviously correct course.

Only one point remains for discussion, and that will not take many minutes. It has been customary hitherto to traverse the transverse mesocolon in joining the jejunum to the back of the stomach. Is this necessary or advisable? It is open to the grave objection that it limits the area of attachment to the size of the area embraced in the loop of the colica media artery. Sometimes this area is not more than an inch and a half in length, rarely is it more than two inches. Now this is not sufficient to get a good flat surface of union free from danger of kinking, and if kinking occurs regurgitation of bile must follow.

On the other hand, if the great omentum be removed and the transverse colon depressed, the whole length of the posterior wall of the stomach is available, and we can unite a length of six or seven inches of apposed viscera. This did not occur to me until the other day, but I intend to give it a trial in future cases, and put it forward as a suggestion for my friends to at least consider.