tumour was growing. If the bladder is packed with gauze and sewn up, the risk of infecting the peritoneal cavity is less than in partial resection when we have also to remove the peritoneum covering the posterior wall, for then we have to work with an open bladder. But in either case, if the small intestines are allowed to gravitate to the upper abdomen in the Trendelenburg position, and the pelvis is well packed with gauze so as to form a secure barrier on the abdominal aspect of the bladder, the risk of peritoneal infection cannot be very great, especially if the urine is flowing directly out of the ureters through ureteral catheters during the operation in the case of partial resection. I think the peritoneum should as far as possible be united in either complete or partial cystectomy from the abdominal aspect, in partial cystectomy as a separate layer after the rest of the bladder wall has been sewn together from the vesical aspect. I believe it is wise also to drain the peritoneal cavity by a split drainage tube with a wick laid against the sutured peritoneum and brought out of the abdominal wound at a separate gap higher up than the vesical drainage opening in the elsewhere closed incision, in cases in which such a peritoneal drainage tube is employed after partial resection of the posterior wall. If Cathcart's apparatus is employed all the urine from the bladder will be drained away from the wound, and there will be no risk of urine gravitating into the peritoneal cavity through the drainage tube. Indeed, if for any reason Cathcart's apparatus failed to work, if the patient were kept in the Fowler position after the operation, there would be little risk of this. But the safest plan seems to be direct drainage from the ureters out through the urethra, so that no urine collects in the bladder for a few days after the operation.

REFERENCES.

¹ Watson, *Annals of Surgery*, 1905, vol. xlii. ²Ibid. ³*Lancet*, 1913, ii, p. 1690.

A CASE OF ECTÓPIA VESICAE IN WHICH THE URETERS WERE GRAFTED SUCCESSFULLY INTO THE RECTUM.

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THE subject of this report was a girl, aged 8 years, who was sent to me by her medical attendant to ascertain if anything could be done to improve her condition.

I found that she had ectopia vesicae, and was in a pitiable condition. Urine was continually spurting in drops from the two ureteric openings, calcareous concretions had formed on the pubic hairs, she was unable to walk except for a short distance, and had to be wheeled about. Her clothing adhered to the protruding posterior bladder wall, causing pain and discomfort by rubbing on it and the concretions; slight haemorrhage also occurred at times. There was a urinous odour about her, and she was unable to attend school; she was fretful and irritable; the posterior bladder wall bulged like a large ventral hernia, and contained coils of intestine; the pubic symphysis was absent.

I decided to transplant the ureters into the rectum, and on October 7th, 1912, under a general anaesthetic, I dissected up the posterior bladder wall from the peritoneum above and triangular ligament below. A catheter was inserted into each ureter, which was cleared for about 2 in.; the redundant portion of the bladder was removed except just around the ureters. I next divided some fibrous tissue in the position of the hymen admitting the finger into the vagina, and then divided the triangular ligament, permitting the lower end of the ureters to be turned back into the vagina in close proximity to the anterior rectal wall. With a finger in the rectum an opening was made through the posterior vaginal and anterior rectal walls, and through this the catheters and ureters were placed; the free edges of the recto-vaginal incision were sutured to the sides of the ureters, the triangular ligament, perineum, and abdominal wounds were respectively drawn together with catgut. Urine was collected in a receptacle for seven days from the two catheters which protruded from the anus; they were

then withdrawn, and the patient made an uninterrupted recovery.

She is now able to run about, attend school, and retain her urine in the rectum for several hours at a time.

ON A DIRECT INTRAGASTRIC METHOD OF TREATING CERTAIN ULCERS OF THE STOMACH

BY REMOVAL "PAR MORCELLEMENT" OF UNHEALTHY TISSUES, AND MOBILIZING HEALTHY GASTRIC MUCOUS MEMBRANE.

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In May, 1910, whilst operating upon a case of gastric ulcer in a young woman aged 25, I was confronted by conditions for the treatment of which, in my opinion, there did not exist any sound or recognized method of surgical procedure.

The conditions which did not lend themselves to the ordinary treatment by excision or gastro-enterostomy were the following:

1. The anterior wall of the stomach, pylorus, and duodenum appeared normal.

2. The peritoneum of the posterior wall of the stomach had participated in an inflammatory attack or attacks, which had terminated in the complete obliteration of the lesser peritoneal sac.

3. After performing the usual exploratory anterior gastrotomy, I found a solitary chronic ulcer of the size of half a crown situated about the middle of the posterior wall of the fundus ventriculi. The unhealthy base of the ulcer was firmly fixed, probably to the pancreas, and it also transmitted the pulsation of the aorta.

The operation I performed was as follows:

1. Scraping radially from the centre of ulcer by Volckmann's spoon all the detachable unhealthy tissues as far as the under surface of the mucous membrane forming its edge.

2. Thermo-cauterization of the exposed fresh base of the ulcer in order to stop haemorrhage completely and to sterilize.

3. Mobilization of the mucous membrane all round the edge of the ulcer by means of a long blunt-pointed scissors curved on the flat and with a delicate end, much after the fashion of Charles Mayo in dissections of the neck.

4. Removal *par morcellement* by means of Arbutnot Lane's bone-nibbling forceps of all the unhealthy mucous membrane now forming the mobile edge of the ulcer. I waited until oozing completely stopped.

5. The edges of the healthy mucous membrane were brought together by means of suitable sutures—continuous or interrupted.

6. The gastrotomy wound was closed by separate continuous suture for the mucous, muscular, and serous layers.

7. The abdominal wall was then closed. The first patient upon whom I carried out the above method of treatment has been under my personal supervision ever since, and the result is a complete success.

I have performed similar operations since upon cases such as ulcer of the lesser curvature at the junction of the vertical and horizontal portions of the stomach with equally good results.

In one other case of gastric or peptic ulcer developing symptoms after the performance of a posterior no-loop gastro-enterostomy, I carried out successfully the direct intragastric treatment by operation through the jejunal loop of the old anastomosis. The performance of this operation was simplified by the circumstance that I had made a large opening between the stomach and jejunum as advocated by Moynihan.

I have not, so far, performed a similar operation for ulcers in the pyloric portion of the stomach, nor for duodenal ulcers. The much-folded mucous membrane of the stomach lends itself to the mobilizing of its affected area, and it seems to me to be quite unnecessary to excise the whole thickness of the stomach—a more risky undertaking than to carry out the method recorded in this paper.

The natural process of repair in cases of damage to the mucous membrane of the stomach is really very remarkable. We have only to reflect upon the successes following the different kinds of suturing adopted by skillful surgeons, which, if applied to the skin, would lead to some risk, and certainly to ugly scars. An example of the extreme limit of Nature's energy for repair of gastric mucous membrane appeared in a paper published in the *BRITISH MEDICAL JOURNAL* of July 13th, 1907, by myself, in which I recorded two cases of perforative peritonitis in patients *in extremis*, upon whom nothing was done except to mop out stomach contents from the general peritoneal cavity and drainage of the abdomen.

Excision of a gastric ulcer is very risky in cases in which the serous membrane has been previously damaged through extension of inflammation from within the stomach.

I believe that this method of treatment will replace that of excision of the middle portions of the stomach which is now so frequently employed, because gastro-enterostomy has proved to be a disappointing operation in ulcers of this area; it is less risky and easier of performance.

The method described above appears to me to be new, for I had the privilege, when on a visit to my friend Sir Berkeley Moynihan last year, to obtain the views of himself and Dr. William Mayo, two of the greatest living authorities on the subject of surgical procedures in gastric surgery.

CHOLECYSTOTOMY IN LIEU OF CHOLECYSTOSTOMY IN CERTAIN CASES OF CHOLELITHIASIS.

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THE employment of cholecystostomy, and more recently cholecystectomy, in the treatment of gall stones has, I venture to think, somewhat overshadowed the simpler operation of cholecystotomy. There are not a few cases in which this operation might with greater advantage be adopted.

Each of the three operations has its own peculiar sphere of application. When the gall bladder itself is so affected that it is functionally useless, and when its retention might prove a source of subsequent trouble, there can be no doubt regarding the advisability of total extirpation. Equally, when drainage of the bile for a time may prove of advantage in secondary pancreatic involvements, the gall bladder should be retained and utilized as a temporary fistula by the performance of cholecystostomy. This same operation is also advisable when there is reason to believe, from their number and small size, that some of the stones may have escaped removal at the first attempt to extract them. Experience teaches in many of these cases that small stones are liable to be retained in the hepatic duct, and only after a few days find their way again into the gall bladder and escape through the temporarily constructed fistula.

There are, however, cases occasionally encountered in which, from the absence of symptoms suggestive of common duct or pancreatic complications, and from the size and shape of the stones, cholecystotomy might quite properly be performed.

The advantages of cholecystotomy lie in the short time the operation takes to perform and the restoration of the gall bladder to its normal condition both anatomically and physiologically. The indications for the performance of cholecystotomy in any particular case may be briefly summed up as follows:

1. *Prior to Operation.*—The symptoms are those of repeated attacks of biliary colic, the pain being located mostly in the gall bladder region with possibly referred manifestations in the back and shoulder; gastric disturbances may be present, such as flatulence, pain, or a sense of heaviness after food, sickness or vomiting, anorexia. Usually there is neither fever nor jaundice; some tenderness may exist on pressure over the gall bladder. The more certain indications, however, are those which are revealed at the operation.

2. *At the Operation.*—The gall bladder is not tensely distended, and when tapped contains practically normal

bile with loose floating stones. The stones are comparatively large, too large for transit through the natural passages. There is absence of inflammatory adhesions, so that the gall bladder is quite free but for its hepatic attachment. In some instances a "flexible gall-stone probe" can be passed through the cystic duct into the hepatic; whether this can be accomplished or not, the permeability of the duct is an essential to the operation; this, however, is sufficiently proved by the comparative flaccidity of the gall bladder prior to its being opened.

As regards the operation, after the removal of the stones, the opening in the gall bladder is surrounded by a purse-string suture, the stitch embracing in its passage about two-thirds of the thickness of the visceral parietes. When this suture is tightened and tied it invaginates the opening and renders impossible any escape of bile. The gall bladder is dropped into the peritoneal cavity, and the parietal wound completely closed.

Within the last six months 15 operations have been performed for gall stones; 7 were colectomies, 5 cholecystostomies, and 3 cholecystotomies—that is to say, 20 per cent. of the cases were considered suitable for the simpler operation of cholecystotomy.

THE URINARY DIASTASE TEST AND LOEWI'S REACTION IN PANCREATIC LESIONS.*

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CASES of pancreatic disease are admittedly difficult of diagnosis. In the more acute forms the clinical signs and symptoms often simulate those of other abdominal emergencies, and in the chronic affections the symptoms are common to other diseases, and may be wrongly interpreted. Among the more recent laboratory tests which have been introduced for the diagnosis of pancreatic disease, the quantitative estimation of diastase in the urine and Loewi's mydriasis reaction are easily and promptly carried out, and the question of their value in diagnosis can only be solved by trial in a number of cases.

The urinary diastase test does not appear hitherto to have received sufficient attention. In a paper on amylolytic ferments in the urine,¹ Dudley Corbett, following Wohlgemuth's work, describes fully the technique for making this estimation. He finds that the amount of starch-reducing ferment passed in the twenty-four hours is fairly constant, the *d* value or index being 10 to 20 units, each unit representing 1 c.cm. of 0.1 per cent. starch solution converted into dextrine in half an hour by 1 c.cm. of urine. The values found in the urine are not affected by ordinary changes of diet in adults, by the reaction of the urine, the presence of bacteria or other abnormal constituents except blood, the ferment being also present in normal blood serum; in fact, provided the kidneys are healthy, the index value of any given twenty-four hours' specimen of normal urine keeps so closely within certain limits, that for clinical purposes no greater accuracy is required. In a variety of cases of disease examined by him, high readings were found in all cases of undoubted pancreatic disease, and also in certain acute infective conditions without pronounced renal damage, and in some forms of eclampsia.

Loewi's test is now well known; a few drops of adrenalin chloride solution of $\frac{1}{1000}$ strength are instilled into the eye, previously examined to ascertain that the cornea is intact; if dilatation of the pupil takes place within an hour the test is positive. In cases of pancreatic inefficiency, and occasionally in Graves's disease, the test is positive. Beyond the fact that in these cases there is increased susceptibility of the sympathetic to stimulation by the adrenalin, there is no known explanation of the reaction.

The two following cases are worth recording, inasmuch as the laboratory tests just mentioned were very helpful in arriving at a diagnosis.

* Communication made at the meeting of the Association of Physicians of Great Britain and Ireland, held in Cambridge, March 20th, 21st, 1914.